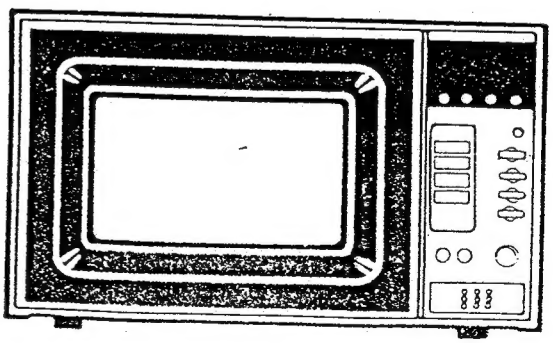
GoldStar Art B

MICROWAVE OVEN SERVICE MANUAL

CAUTION
BEFORE SERVICING THE UNIT, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL.



MODEL: ER-686ZD

SAFETY PRECAUTIONS

WARNING TO SERVICE TECHNICIANS PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

A) Do not operate or allow the oven to be operated with the door open.
B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary; (1) Interlock operation, (2) Proper door closing, (3) Seal and sealing surfaces (arcing, wear, and other damage), (4) Damage to or loosening of hinges and latches; (5) Evidence of dropping or abuse.
C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
E) A microwave leakage check should be performed on each oven prior to release to the owner.

- Proper operation of the microwave oven requires that the magnetron be assembled to the wave guide and cavity. Never operate the magnetron unless it is properly installed.
- Be sure that the magnetron gasket is properly installed around the dome of the tube whenever installing the magnetron.
- Routine service safety procedures should be exercised at all times.
- Untrained personnel should not attempt service without a thorough review of the test procedures and safety information contained in this manual.

Read this manual carefully. Failure to adhere to or observe the information in this Manual may result in exposing yourself to the Microwave Energy normally contained within the oven cavity.

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CAUTIONS

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high voltage, high current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION: REMOVE YOUR WATCH WHEN WORKING CLOSE TO OR REPLACING THE MAGNETRON.

Warning about the electric charge in the voltage capacitor.
For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor when replacing or checking parts, short between oven chassis and the "+" terminal of high voltage diode by using a properly insulated jumper wire.

WARNING: THERE IS HIGH VOLTAGE PRESENT, WITH HIGH CURRENT CAPABILITIES IN THE CIRCUITS OF THE HIGH VOLTAGE TRANSFORMER SECONDARY AND FILAMENT TRANSFORMER SECONDARY. IT IS EXTREMELY DANGEROUS TO WORK ON OR NEAR THESE CIRCUITS WITH THE OVEN ENERGIZED.

WARNING: NEVER TOUCH ANY CIRCUIT WIRING WITH YOU HAND OR INSULATED TOOL DURING OPERATION. DO NOT MEASURE ANY VOLTAGE IN THE HIGH VOLTAGE CIRCUIT INCLUDING FILAMENT VOLTAGE OF MAGNETRON.

WARNING: DO NOT TOUCH ANY PART OF THE CONTROL CIRCUIT. A RESULTING STATIC ELECTRIC DISCHARGE MAY DAMAGE THIS CONTROL PANEL.

MICROWAVE RADIATION: PERSONNEL SHOULD NOT BE EXPOSED TO THE MICROWAVE ENERGY WHICH MAY RADIATE FROM THE MAGNETRON OR OTHER MICROWAVE GENERATING DEVICE IF IT IS IMPROPERLY USED OR CONNECTED. ALL INPUT AND OUTPUT MICROWAVE CONNECTIONS, WAVEGUIDES, FLANGES, AND GASKETS MUST BE SECURE. NEVER OPERATE THE DEVICE WITHOUT A MICROWAVE ENERGY ABSORBING LOAD ATTACHED. NEVER LOOK INTO AN OPEN WAVEGUIDE OR ANTENNA WHILE THE DEVICE IS ENERGIZED.

INSTALLATION PRECAUTIONS

A. Plug the power supply cord into a 220V AC, 50Hz, single-phase power source.
B. Use the microwave oven in an ambient temperature less than 104°F (40°C).
C. Avoid placing the unit in a location where there is direct heat or splashing water.
D. Place the microwave oven on a sturdy and flat surface.
E. Place the unit as far away as possible from T.V., radio, etc., to prevent interference.
F. Avoid placing objects on the top cover so as not to obstruct air flow ventilation.
G. Keep more than 10cm (4 inches) from the back plate to wall.

CAUTION
This unit is equipped with a 3-prong plug for your safety if the wall outlet is a grounded 3-hole type the unit will be grounded automatically.

a. EARTHING INSTRUCTIONS

For personal safety, this appliance must be earthed. In the event of an electrical short circuit, earthing reduces the risk of electric shock by providing an escape wire for the electric current. Thise appliance is equipped with a cord having an earthing wire with an earthing plug, which must be plugged into an individual socket that is properly installed and earthed.

WARNING-Use of the unearthed plug can result in a risk of electric shock. Do not, under any circumstances, cut or remove the third earth prong from the power cord.

The conseumer should have it checked by a qualified electrician or serviceman if the earthing instructions are not completely understood, or if doubt exists as to whether the appliance is properly earthed.

WARNING–THIS APPLIANCE MUST BE EARTHED

IMPORTANT

The wires in this mains leads are coloured in accordance with the following code

Green-and-yellow	: Earth
Blue	: Neutral
Brown	: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol ⏚ or coloured green or green-and-yellow.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

b. CIRCUITS

For safety purposes this oven must be plugged into a 6.3 Amp circuit. No other electrical appliances or lighting circuits should be on this line. If in doubt, consult a licensed electrician.

c. VOLTAGE WARNING

The voltage used at the wall receptacle must be the same as specified on the oven serial plate located on the back or on the side of the control panel of the oven. Use of a higher voltage is dangerous and may result in a fire or other type of accident causing oven damage. Low voltage will cause slow cooking. In case your microwave oven does not perform normal operation in accordance with AC power source and voltage, remove the power cord and then insert it again.

d. LOCATION OF THE OVEN

Your microwave oven can easily be placed in your kitchen, family room or any other room in your home. Place the oven on a flat surface such as a kitchen counter top or a specially designed microwave oven cart. Do not place oven above a gas or electric range. Free air flow around the oven is important.

e. DO NOT BLOCK VENTS

All air vents should be kept clear during cooking. If air vents are covered during oven operation the oven may overheat. In this case a sensitive thermal safety device automatically turns the oven off. The oven will be inoperable until it has cooled sufficiently.

SPECIFICATIONS

Rated Power Consumption	1100 W
Microwave Output	700 W
Frequency	2450 MHz ± 50 MHz.
Power Supply	Single phase 220 V, 50 Hz, earthed
Rated Current	5.0 Amp.
Magnetron Cooling	Forced air cooling
Microwave Stirring	Turntable
Safety Device	Primary Interlock Switch/Secondary Interlock Switch Monitor Switch. Main Fuse (T 6.3 Amp), Monitor Fuse (T 1.25 Amp) Magnetron Thermostat Open at 145°C ±6°C. Close at 60°C ±15°C
Magnetron	2M214-39F or 2M214-69
High Voltage Capacitor	Capacitor 0.86 μF, 2100V AC
High Voltage Diode	350mA, 9KV
Oven Lamp	240 V, 20 W
Timer	90 min
Overall Dimension (W × H × D)	20⅛" × 13⅛" × 13⅝" (510 × 333 × 352 mm)
Cavity Dimensions (W × H × D)	13" × 10⅜" × 12⅝" (327 × 261 × 320 mm)
Cavity Volume	1.0 cu. ft

* Specifications are subject to change without notice.

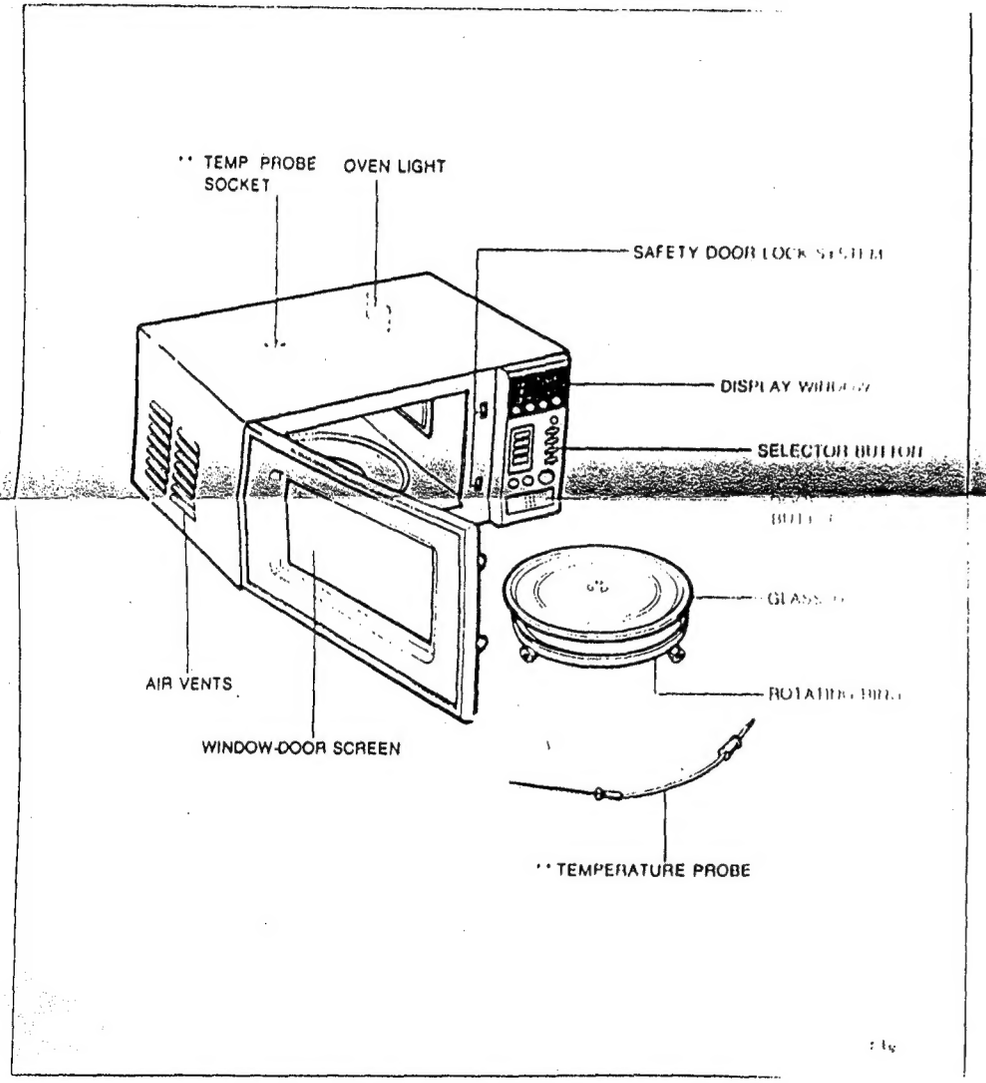
SWITCH CHART

	PRIMARY INTERLOCK SWITCH	SECONDARY INTERLOCK SWITCH	MONITOR SWITCH	
CONDITION	COM	COM	COM	COM
	NO	NO	NC	NO
DOOR OPEN	OPEN	OPEN	CLOSED	OPEN
DOOR CLOSED	CLOSED	CLOSED	OPEN	CLOSED

Ref. COM: COMMON
NO: NORMAL OPEN
NC: NORMAL CLOSED

OPERATING INSTRUCTIONS

A. FEATURES



B. CONTROL PANEL

Indicator Lights-AUTO START, AUTO WEIGHT DEFROST, TIME, TEMP, AUTO TIME, AUTO TEMP, RECIPE, POWER lights indicate which cooking operation is being used.

Recipe Entry Recall-Used to preset favorite cooking programs for use at a later date by touching RECIPE#. And it is also used to call up a cooking program stored in the memory sequentially

Auto Start-Starting the cooking automatically

Auto Weight Defrost-Used to defrost with three pads and to select weight with NUMBER pad

Temp-Used in selecting the desired food temperature automatically.

Auto Temp-Used in selecting cooking temperature automatically.

Auto Time-Used to select programmed time recipe.

Clear-Clears all entries except time of day.

Display Window-Used to show
- Time of day
- Cooking time
- Cooking power level
- Cooking temperature
- It also function as count down timer or temperature indicator during cooking.

Clock-Used to set the time of day

Power Level-Used in selecting cooking power level

Timer/Weight/Temp: Used to select the time, weight, temp

Start-Starts the oven.

Door Open Button

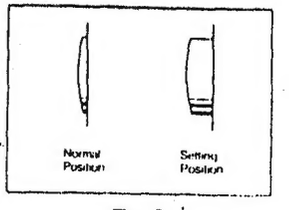


Fig. 2

C. OPERATING PROCEDURE

1. SETTING CLOCK

EXAMPLE: The present time is 12:34.

STEP	KEY PAD	DISPLAY WINDOW
1. Plug the power cord into an electrical outlet.		0
2. Touch "Clock"	CLOCK	0 :00
3. Rotate the Timer/Weight/Temp Knob with it out (setting position) to indicate correct hour (12 hours)	TIMER/WEIGHT/TEMP	12 :00
4. Touch "Clock"	CLOCK	12:00:00
5. Rotate the Timer/Weight/Temp knob with it out (setting position) to indicate correct minutes (34 minutes)	TIMER/WEIGHT/TEMP	12:34:00
6. Touche "Clock"	CLOCK	12:34:01

Note: The Timer is a 24 hour CLOCK("20:30" correspouds to 8:30 P.M.)

2. FULL-POWER (HIGH) COOKING

EXAMPLE If you want to cook fresh fish on full power for 5 minutes 30 seconds

STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear".	CLEAR	0
2. Touch "High".	HIGH	0:00
3. Rotate the Timer/Weight/Temp knob with it out (setting position) to set the desired cooking time.	TIMER/WEIGHT/TEMP	5:30
4. Touch "Start".	START	5:30

Note
To stir food during cooking open the oven door; stir or turn the food.
Close the oven door and touch start. The oven will automatically continue to count down the amount of time left on the timer.

3. "MULTI-POWER" COOKING

Many foods need slower cooking (at less than full power) in order to give you the best results. In addition to "FULL POWER (HIGH)" there are four multi-power settings.
The cookbook tells you which power setting is recommended for the food being cooked.

STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear".	CLEAR	0
2. Touch pad for desired power level (Warm).	WARM	0:00
3. Rotate the Timer/Weight/Temp knob with it out (setting position) to set the desired cooking time (1 minutes)	TIMER/WEIGHT/TEMP	1:00
4. Touch "Start".	START	1:00

NOTE
If you touch a wrong pad of level, you can correct it by touching the right pad after step 2.

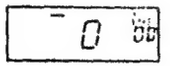
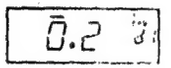
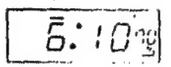
GUIDE FOR MULTI POWER
The "MULTI-POWER" feature lets you can cook at the best power level for the food being cooked. Cooking directions can be found in the cookbook

POWER SETTING	POWER PERCENTAGE	EXAMPLES
(WARM)	10%	• Softening cream cheese. • Keeping casserokes and main dishes warm.
(LOW)	30%	• Thawing meat, poultry and seafood. • Completing the cooking cycle of casseroles, stews and some sauces. • Cooking small quantities of most foods.
(MEDIUM)	50%	• Cooking scrambled egges.
HIGH(FULL POWER)	100%	• Cooking tender cuts of meal. • Cooking fish, vegetables and most casseroles. Preheating the browning dish. • Boiling water. • Thickening some sauces.

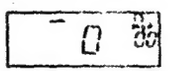
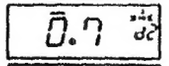
4. AUTO WEIGHT DEFROST

The microwave oven controls different output powers automatically during defrosting time programmed by setting weight and functions (MEAT, POULTRY, FISH) of AUTO WEIGHT DEFROST functions you want to cook.

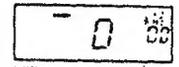
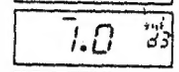
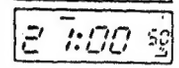
1) MEAT (Touch "Auto Weight Defrost" once for meat defrosting.)
EXAMPLE: To defrost 0.2 kg. of meats.

STEP	KEY PAD	DISPLAY WINDOW
1. Measure the weight of frozen food you want to cook and place it in the oven and close the door.		
2. Touch "Clear".		
3. Touch "Auto Weight Defrost".		
4. Rotate the Timer/Weight/Temp knob with it out (setting position) to set weight of frozen food you measured (0.2 Kg)		
5. Touch "Start".		

2) POULTRY (Touch "Auto Weight Defrost" twice for poultry defrosting.)
EXAMPLE: To defrost 0.7 kg. of poultry.

STEP	KEY PAD	DISPLAY WINDOW
1. 2. Step 1 and 2 are the same with "MEAT".		
3. Touch "Auto Weight Defrost twice.		
4. Rotate the Timer/Weight/Temp knob with it out (setting position) to set weight of frozen food you measured (0.7 Kg)		
5. Touch "Start".		

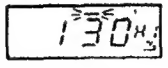
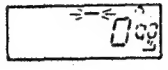
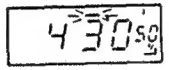
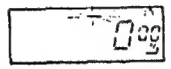
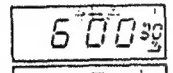
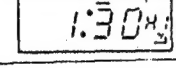
3) FISH (Touch "Auto Weight Defrost" three times for fish defrosting.)
EXAMPLE: To defrost 1.0 kg of fishes.

STEP	KEY PAD	DISPLAY WINDOW
1. 2. Step 1 and 2 are the same with "MEAT".		
3. Touch "Auto Weight Defrost" three times.		
4. Rotate the Timer/Weight/Temp knob with it out (setting position) to set weight of frozen food you measured (1.0 Kg)		
5. Touch "Start".		

Note
1. This oven can defrost from 0.1 kg to 4.9 kg
2. This oven can defrost in stage of 0.1 kg

5. THREE-STAGE COOKING

This cooking allows you to set the oven to cook in one stage at a certain power level for a chosen time or temperature and then in a second and a third stage at a different power level for a chosen time or temperature.

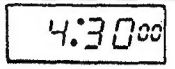
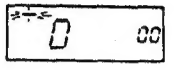
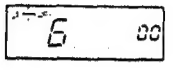
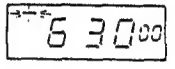
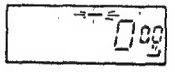
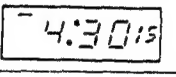
STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear".		
2. Touch "High".		
3. Rotate the Timer/Weight/Temp knob with it out (setting position) to set the cooking time. (1 minute 30 seconds)		
4. Touch "Medium"		
5. Step 5 is same as step 3 above. (4 minutes 30 seconds)		
6. Touch "Low"		
7. Step 7 is the same as step 3 above. (6 minutes)		
8. Touch "Start".		

NOTE
1. If you want two-stage cooking, push the start pad after step 5 is completed.
2. You can also use temperature cooking.
3. Don't use Temp Probe with Auto Weight Defrost Cooking or Time Cooking.

6. AUTO START COOKING

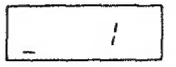
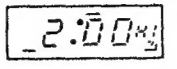
Auto Start cooking can be done by starting the cooking automatically and finishing at a preset Delay Start time, for the chosen cooking time.

EXAMPLE: If you want to start at 6:30 (Current time of day is 4:30.)

STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear".		
2. Touch "Auto Start".		
3. Rotate the Timer/Weight/Temp knob with it out (setting position) to indicate correct hour. (6 hours.)		
4. Touch "Auto Start".		
5. Rotate the Timer/Weight/Temp knob to indicate corect minute. (30 minutes)		
6. Touch button for desired power level.		
7. Rotate the Time/Weight/Temp knob with it out (setting position) to set the desired cooking time. (15 minutes)		
8. Touch "Start"		

NOTE
1. A preset Auto Start time is less than 24 hours. The timer is a 24 hour clock. ("18:30" corresponds to 6:30 P.M.)
2. Fresh food should not stand at room temperature for too long.
3. Before the Auto Start button is touched, the time of day must be set.
4. When the door is opened and closed again during Auto Start operation, "Strt" is displayed in the display window to call Start pad.
5. Auto Start cooking must always be used after Time of Day is set if Time of Day is not set and start the oven "Err" will be displayed.

7. AUTO TIME

STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear"		
2. Touch "Auto Time"		
3. Touch "Start"		

NOTE: Refer to table #1 for detailed recipe corresponding to each number which appears in the display window whenever you touch the Auto Time pad.

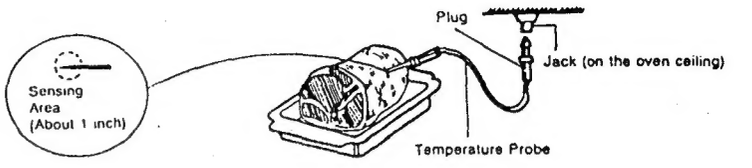
Table #1

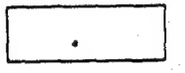
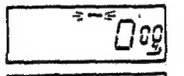
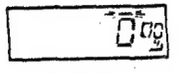
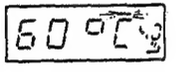
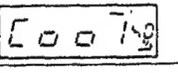
NO.	MENU	STAGE 1		PAUSE	STAGE 2	
		POWER LEVEL	TIME		POWER LEVEL	TIME
1	BACON SLICED	100 %	2:00	X		
2	BAKED POTATO	100 %	2:10	O	100 %	2:10
3	CANNED VEGETABLE	100 %	2:00	O	100 %	2:00
4	HOT DOG	100 %	0:40	X		
5	CHICKEN (BONE IN)	100 %	2:00	O	100 %	2:00
6	COFFEE	100 %	2:20	X		
7	HAMBUGER	100 %	1:00	O	100 %	1:00

Note: Whenever you touch the Auto Time pad, the number in the display window changes from No. 1 to No. 7 gradually. Choose the desired number (desired recipe) for the best result.

8. TEMPERATURE COOKING ON FULL AND MULTI-POWER

1. Plug the temperature probe into the jack on the ceiling of the oven.
2. Place the temperature probe into the food with the first inch of the sensor into the center of the food. The temperature probe is used to judge doneness when cooking or reheating food.



STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear".		
2. Touch the desired power level.		
3. Touch "Temp".		
4. Rotate the Timer/Weight/Temp knob with it out (setting position) to set the desired cooking temperature (60°C)		
5. Touch "Start".		

NOTE

1. Temperature from 35°C to 95°C can be chosen and set. The display will show the rise in food temperature.
2. The lowest temperature number that can be displayed at 35°C. Therefore, even though food may be less than 35°C, the display will remain at "Cool" until the food is heated to above 35°C.
3. If the temperature probe is not plugged into the jack, display window will show "Prob".

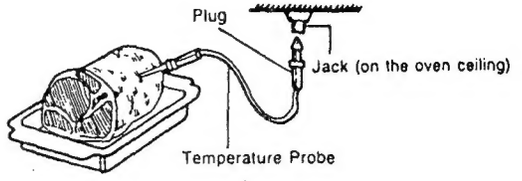
COOKING TEMPERATURE AND POWER LEVEL OF EACH STAGE FOR MENUS

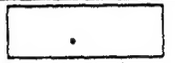
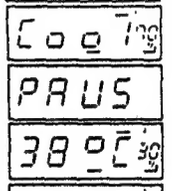
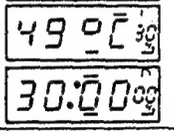
NO.	MENU	STAGE 1		PAUSE	STAGE 2		STAGE 3	
		POWER LEVEL	°C(°F)		POWER LEVEL	°C(°F)	POWER LEVEL	TIME (MINUTE)
1	BEEF (RARE)	70%	38(100)	When the display window will show "PAUS" open the door and stir and turn the food. And then close the door and toucn start again. If not needed, touch start without these procedures.	30%	49(120)	0%	30
2	BEEF (MEDIUM)	70%	38(100)		30%	54(130)	0%	30
3	BEEF (WELL DONE)	70%	38(100)		70%	60(140)	0%	30
4	HAM (FULLY COOKED)	30%	38(100)		30%	49(120)	0%	30
5	CHICKEN (WHOLE)	30%	38(100)		30%	82(180)	0%	30
6	PORK	30%	38(100)		30%	74(165)	0%	30
7	MEATLOAF	30%	38(100)		30%	68(155)	0%	30

Note: Whenever you touch the Auto Temp button the number in the display window changes from No. 1 to No. 7 gradually. Choose the desired number (desired recipe) for the best result.

according to the menu.

1. Plug the temperature probe into the jack on the ceiling of the oven.
2. Place the temperature probe into the food with the 2.5cm of the sensor into the center of the food.

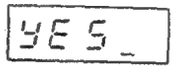


STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear"		
2. Select desired number by touching "Auto Temp".		
3. Touch "Start". When 1st cooking ends. Display window will show "PAUS". and two beep tones will sound.		
4. Touch "Start" once more. 2nd stage cooking ends, two beep tones sound and 3rd stage cooking begins. When 3rd stage cooking ends, "End" appears in display window.		

NOTE

1. The display window will show the temperature from 35°C to 38°C with going up 1° increments. When over temperature reaches 38°C, two beeps will sound and "PAUS" will appear in the display window.
2. When the display window will show "PAUS", open the door and stir or turn the food. And then close the door and touch start again.
3. Refer to Table #2 for detailed recipe corresponding to each number which appears in the display window whenever you touch the Auto Temp pad.

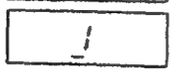
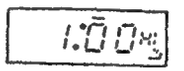
10. MEMORY ENTRY

STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear".		
2. Touch "High".		
3. Rotate the Timer/Weight/Temp knob with it out (setting position) to set the desired cooking time. (1 minutes)		
4. Touch "Memory Recall".		
5. Touch "Memory Entry".		
6. Touch "Start".		

NOTE: You can enter your own recipes in the memory bank of three blocks by touching Memory Entry One block means one sequential cooking program (i.e., combination of STAGE 1, STAGE 2, and STAGE 3) The numbers for memory bank are 1,2 and 3 Memory Entry button is used.

11. MEMORY RECALL

EXAMPLE: When the 1 minutes. (HIGH POWER)

STEP	KEY PAD	DISPLAY WINDOW
1. Touch "Clear".		
2. Touch "Memory Recall".		
3. Touch "Start".		

Note: Memory Recall button is used to recall cooking data programmed or input a proper cooking program in each memory stage.

CIRCUIT DESCRIPTION

- The low voltage transformer supplies the necessary voltage to the micom controller when power cord is plugged in.
- As the door is opened the contact of monitor switch is closed. This switch creates the short circuit to blow 6.3A fuse during operation under abnormal condition. (ie, should be contacts of primary switch and secondary switch fail to open the circuit)
- The door latches are secured by the latch board.

WHEN COOKING POWER LEVEL AND COOKING TIME ARE SET BY TOUCHING THE TIME COOK AND THE POWER LEVEL PAD

- The micom controller memorizes the function you set.
- The time you set appears in the display window.
- Each function-indicate turns on to indicate that stage has been set.

WHEN TOUCHING THE START PAD

- The coil of the RELAY 2 is energized by micom controller.
- The RELAY 1 operates.
- 220 volts AC supplied to the high voltage transformer.
- FAN motor rotates and cools the magnetron by blowing the air (comin) from inlet of the back plate) over the magnetro fins.
- This air is also directed into oven to exhaust the vapor.
- The oven light turns on.
- Function indicate Bar word sharts Displaying indicate progress function.
- Cooking time starts counting down.
- 3.2 Volts AC is generated from the filament winding of the high voltage transformer. This 3.2 volt is applied to the magnetron to heat magnetron filament through two noise suppr ssion choke coils. A high voltage 2100 volts AC is generated in the secondary winding of the high voltage transformer and this secondary voltage is increased by action of the diode and charging of the high voltage cpapcitor. This resultant DC voltage is then applied to the magnetron via the filament.
- The disturbance wave generated by the magnetron is suppressed by the choke coils, raise filter assembly and the magnetron shielded case, so that TV and RADIO programs are not impaired by noise.

WHEN THE OVEN IN SET AT ANY POWER EXCEPT MAX POWER LEVEL

- Micom controller controls the ON-OFF time of the RELAY 2 by the applied gate signal to vary the average output power of microwave oven from "POWER LOW" to "POWER HIGH".
- One complete cycle of RELAY 2 is 22 seconds.

POWER CHART

INDICATION	OUTPUT POWER AGAINST HIGH POWER	ON-OFF TIME OF RELAY
1.	4/22 (10%)	ON OFF
2.	6/22 (20%)	
3.	8/22 (30%)	
4.	10/22 (40%)	
5.	12/22 (50%)	
6.	14/22 (60%)	
7.	16/22 (70%)	
8.	18/22 (80%)	
9.	20/22 (90%)	
10.	22/22 (100%)	

WHEN THE DOOR IS OPENED DURING COOKING

- Both primary switch open to cut off primary winding voltage to the high voltage transformer.
- ON-OFF Time of Relay is coupled electrically with opening and closing of secondary switch.
- When the door is opened, secondary switch is opened and when the door is closed, secondary switch is closed.
- Function indicate word stops displaying and display stops counting down.
- Relay stops functing.
- As the door is opened, if the contact of primary switch fail to open, the 6.3 amp fuse blows by the large current surge caused by the monitor switch activation and in turn this stops magnetron oscillation. (Fig. 4)

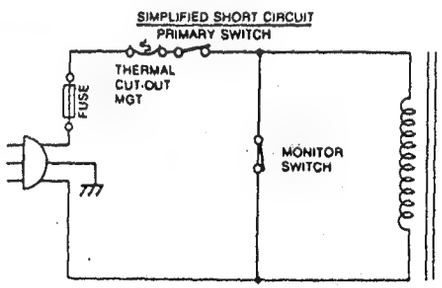


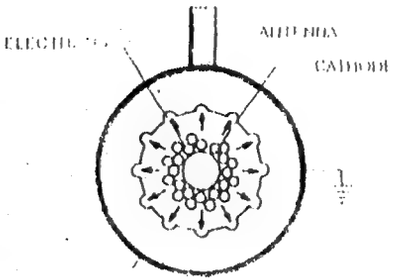
Fig. 4

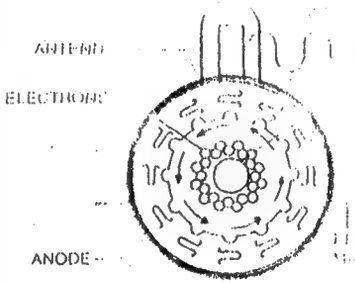
MAGNETRON TUBE

- *The magnetron tube is the heart of the microwave oven. It is basically a diode with the addition of a magnetic field. The magnetron tube assembly consists of cylindrical cathods (negative) terminal, unclosed within a cylindrical anode (positive) terminal, evacuated of all air, and surrounded by a permanent magnet.*
- In order to create an electron flow from cathode to anode, the cathode must be heated and a potential difference must exist between the two. This is accomplished by heating the cathode with 3.15 VAC (from the filament winding of the high voltage transformer), and applying a negative 4000 VDC (from the voltage doubler circuit) to the cathode.
- Originally, the electrons would travel in a straight line from the cathode to the anode (see Fig. 5). However, with the addition of a permanent magnet surrounding the anode creating a magnetic field, the electrons travel an orbital path between the cathode and anode (see Fig. 6). As the electrons approach the anode, their orbital path takes them past small resonant cavities that are part of the anode. The passing motion of the electrons induces electron current to oscillate in the resonant cavities at the very high frequency or 2,450 megahertz. This RF energy is then transferred to the antenna.

TESTING MAGNETRON TUBE

- Disconnect power, remove the wrapper, and discharge the capacitor.
- Remove the two leads from the magnetron terminals.
- Connect the ohmmeter between one terminal of the magnetron and the outer case of the magnetron. If the ohmmeter reads infinity, go to below. If the ohmmeter reads less than infinity, the magnetron is shorted.
- Connect the ohmmeter across the terminals of the magnetron. The ohmmeter should read less than one ohm. If ohmmeter reads over one ohm or infinity, the tube is defective.





INSTALLATION AND ADJUSTMENT OF INTERLOCK SYSTEM

INTERLOCK MECHANISM

The door lock mechanism is a device which has been specially designed to completely eliminate microwave when the door is opened during cooking and thus to perfectly prevent the danger resulting from the leakage of microwave.

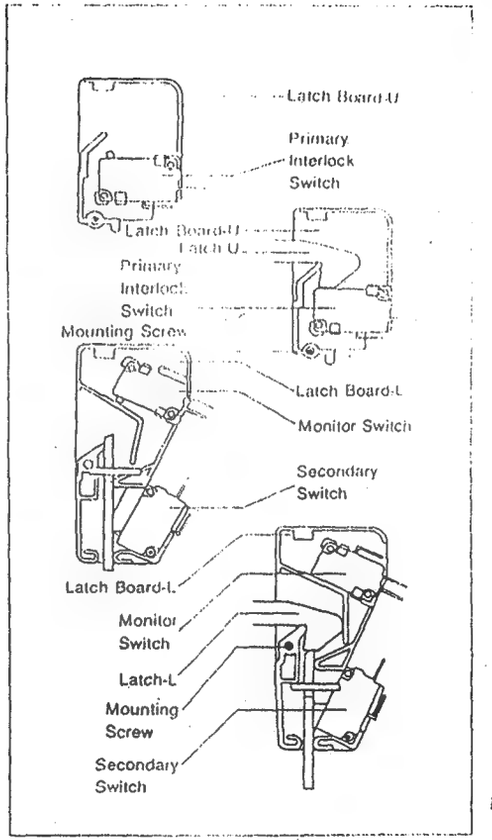


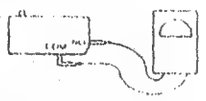
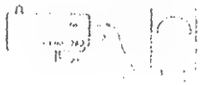
Fig. 7

INSTALLATION AND ADJUSTMENT OF THE LATC BOARD ASM TO THE OVEN ASSEMBLY

- Mount the latch board to the oven assembly.
- Adjust the latch board arrow direction so that ov door wil not have any play in it where closed.
- Tighten the mounting screw.
- Check for play in the door by pushing the door relea button. Door movement play should be less than 0 mm (1/64").
- Do not push the door release button while maki adjustment.
  Make sure that the latch moves smoothly after adjus ment in completed and that screws are tight.
- After the adjustment, make sure by the continuity te procedure that the primary switch operates properl

INTERLOCK CONTINUITY TEST

- The service personnel should replace all of the monitored safety interlock switches and monitor switch only after the oven has been rendered inoperative due to the failure of the monitored safety interlock(s).
- Be sure to connect the monitor switch after replacement and to check interlock/monitor switch continuity.

COMPONENTS	TEST PROCEDURE	RESULT
SWITCHES (Wire leads removed.)	Check for continuity of the switch with an Ohm-meter	
	Primary Switch 	Door open
	Monitor Switch 	
	Secondary Switch	
	NOTE: After checking for the continuity of switches, make sure they are correctly connected.	

PRIMARY INTERLOCK (UPPER LATCH) SWITCH TEST

When the door button is slowly depressed with the door closed, an audible "click" should be heard at the same time or successively at intervals. When the button is slowly released, the latches should activate the switches with an audible "click".

If the latches do not activate the switches when the door is closed, the switches should be adjusted in accordance with adjustment procedure.

Isolate the primary switch by disconnecting it from lead-wire. Connect the ohmmeter leads to the common (COM) and normally open (NO) terminal of the switch. The meter should indicate an open circuit in door open condition. When the door is closed, the meter should indicate a closed circuit.

When the primary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

SECONDARY INTERLOCK (LOWER [illegible] SWITCH TEST

Isolate the secondary switch by disconn[illegible] lead wire. Connect the ohmmeter leads [illegible] (COM) and normally open (NO) terminal[illegible] The meter should indicate an closed circ[illegible] open condition. When door is closed, th[illegible] indicate an closed circuit. When the sw[illegible] operation is abnormal, make the necess[illegible] or replace the switch only with the sam[illegible]

MONITOR SWITCH TEST

Isolate the monitor switch by disconnec[illegible] wire. Connect the ohmmeter leads to the c[illegible] and normally close (NC) terminals of the [illegible] meter should indicate closed circuit in the o[illegible] dition. When door is closed, the meter [illegible] an open circuit.

When the monitor switch operation is ab[illegible] the same type of switch.

NOTE: After repairing the door or the s[illegible] it is necessary to make this continuity test [illegible] the oven.

NECESSARY TOOLS AND MEASURING INSTRUMENTS

NECESSARY TOOLS

Tools normally used for TV servicing are sufficient. Standard tools are listed below.

- Diagonal pliers
- Long nose pliers
- Cross head screwdriver
- Socket wrench (size 5mm)
- Nutdriver (size 5 mm)
- Adjustable wrench
- Soldering iron
- Solder
- Vinyl insulation tape
- Polishing cloth

NECESSARY MEASURING INSTRUMENTS

- Tester (Volt DC, AC-ohmmeter)
- Inch scale
- Electromagnetic radiation monitor
- 600 cc glass beaker or equivalent
- Glass thermometer 100°C
- Two 1 liter beakers or equivalent

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

A. REMOVING THE OUTER CASE (FIG. 8)

(1) Remove five screws from the side section.
(2) Remove three screws from the rear section.
- The outcase must be moved backward to the lifted off.

- **REPLACING THE POWER SUPPLY CORD.**
- Remove the outer case.
- Disconnect the terminal of power supply cord.
- Remove the power supply cord from the appliance.
- Itstall new power supply cord as shown in Fig. 8.
- Connect terminals of power supply cord, Live, Neutral and Earth.

CAUTION
MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

B. REMOVING CONTROL PANEL ASS'Y (FIG. 9)

(1) Disconnect the wire leads (from relay 1 and relay 2) and I/O connector.
(2) Remove the earth screw securing earth terminal to the front plate.
(3) Remove two screws securing the control panel to the front plate.
(4) Remove the control panel.

NOTE:
Remove the wire leads from the relay 1, relay 2 and I/O connector VERY CAREFULLY. Be sure to grasp the connector, and not the wires.

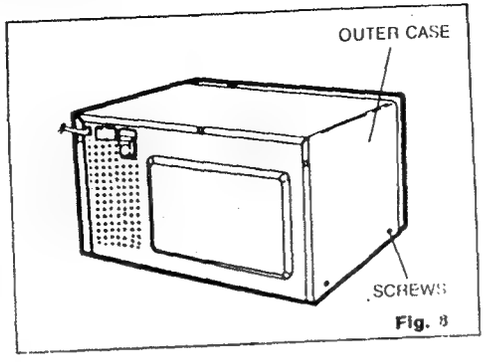


Fig. 8

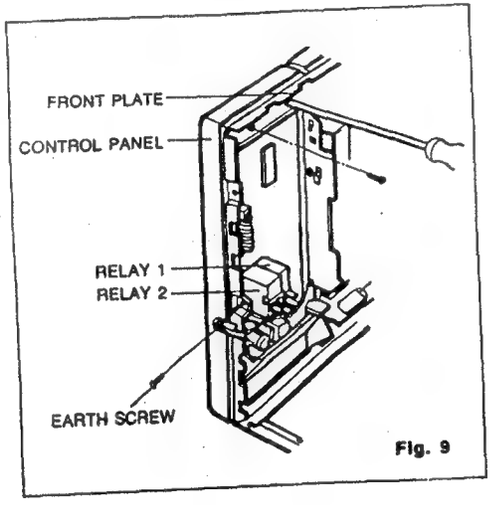


Fig. 9

C. REMOVING PCB ASSEMBLY (FIG. 10)

(1) Disconnect the wire leads from URI connector.
(2) Remove two screws securing the PCB assembly from the control panel.
(3) Remove three screws securing the power trans volume assembly.
(4) Remove the screws securing the tactile key assembly from control panel.
(5) Remove the release lever.
(6) Remove the digitron window.
(7) Separate the key membrance from the control panel.
(8) Remove the door button and button spring.

NOTES:
1. Reverse the above steps for reassembly.
2. Do not touch any part of the circuitry on the control circuit on the control circuit board since static electric discharge may damage the control unit. Always touch yourself to ground while working on this circuit to discharge any static charge accumlated in your body.

CAUTION
WHEN REMOVING THE HIGH VOLTAGE TRANSFORMER, DIODE, CAPACITOR AND MAGNETRON, ALWAYS DISCHARGE THE HIGH VOLTAGE CAPACITOR.

D. REMOVING THE HIGH VOLTAGE TRANSFORMER (FIG. 11)

(1) Disconnect the wire leads from H.V. transformer to the magnetron and H.V. capacitor.
(2) Remove two screws securing the H.V. transformer to the base plate.
(3) Tilt the top of the H.V. transformer forward and lift it up.

NOTES:
1. Remove the wire leads from the H.V. transformer VERY CAREFULLY.
2. When removing the wire leads from the parts, be sure to grasp the connector, and not the wires.

E. REMOVING THE HIGH VOLTAGE DIODE AND HIGH VOLTAGE CAPACITOR (FIG. 12)

(1) Discharge the High Voltage capacitor.
(2) Disconnect the wire leads from the H.V. capacitor.
(3) Remove fan motor and suction guide. (See page 30.)
(4) Remove one screw securing the H.V. capacitor and diode to the base plate.

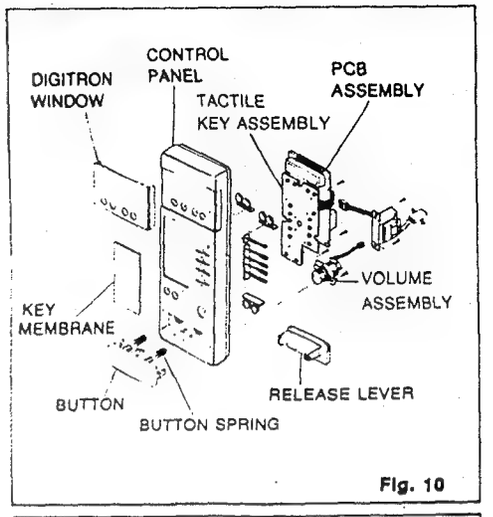


Fig. 10

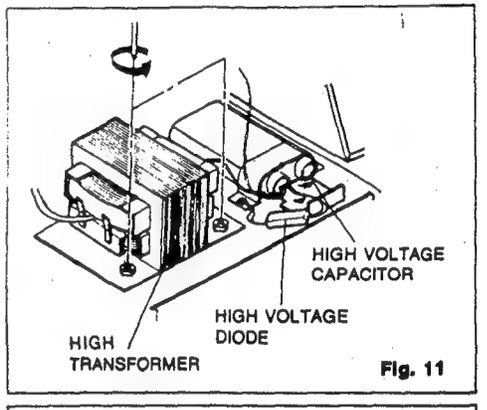


Fig. 11

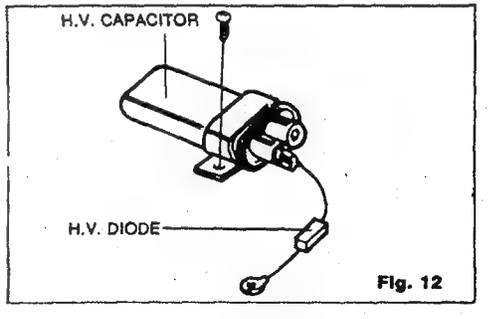
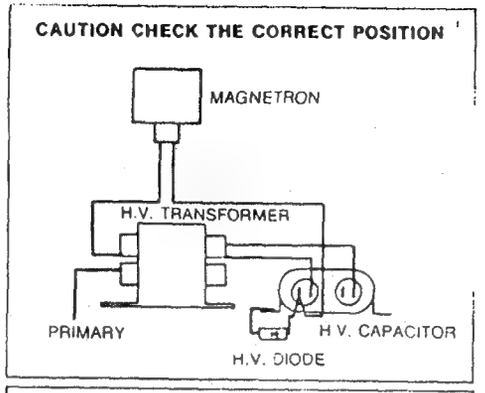


Fig. 12

NOTES

1. Remove the connector from the H.V. capacitor VERY CAREFULLY with long nose pliers.
2. When removing the connector from the H.V. capacitor, be sure to grasp the connector, and not the wires.
3. Remove the diode from the H.V. capacitor VERY CAREFULLY with long nose pliers.



F. REMOVING MAGNETRON (FIG. 13)

(1) Disconnect the wire leads from the magnetron.
(2) Remove one screw (G) to detach the air duct from the unit. (Fig. 13).
(3) Remove two screws securing the section guide.
(4) Remove four machine screws (A, B, C and D) securing the magnetron to the unit. (Fig. 13)

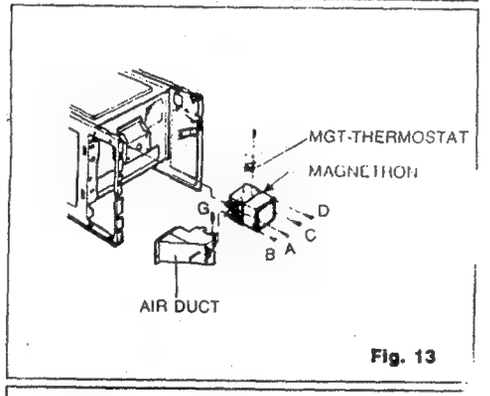


Fig. 13

NOTES

1. When removing the magnetron, make sure its dome does not hit any adacent parts, or it may be damaged. (Fig. 14)
2. When replacing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition. (Fig. 14).
3. After replacing the magnetron, check on microwave energy leakage with a survey meter around the magnetron.
   Microwave energy must be below the limit of 5 mW/cm². (With a 275 ml water lead)
   – See page 31 (MEASUREMENT WITH THE OUTER CASE REMOVED)

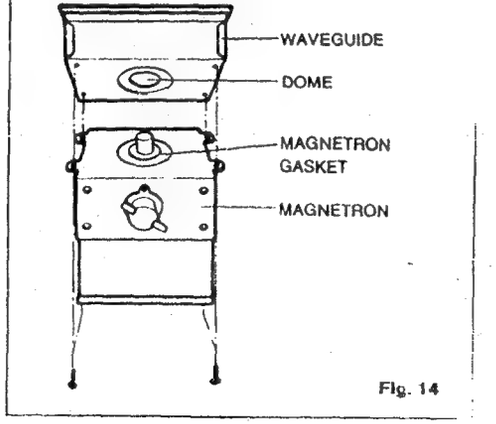


Fig. 14

G. REMOVING THE FAN MOTOR (FIG. 15)

(1) Disconnect the wire leads from the fan motor terminal.
(2) Remove two screws securing the suction guide Asm to the magnetron.
(3) Remove one screw securing the suction guide Asm to the back plate.
(4) Remove two screws securing the fan motor to the back plate.

NOTE: Reverse the above steps for reassemblage.

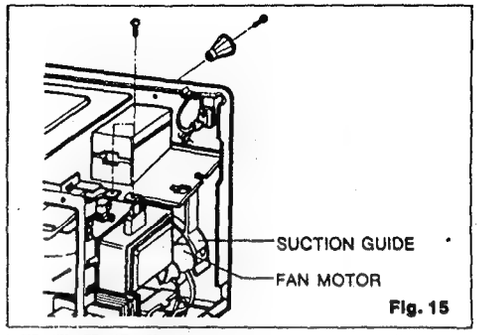


Fig. 15

H. REMOVING DOOR (FIG. 16)

(1) Remove two screws securing the upper hinge.
(2) To remove the door, tilt the top of the door forward and lift up.

NOTES

1. After replacing the door, be sure to check that the primary switch, monitor switch and secondary switch operates normally.
2. After replacing the door, check for microwave energy leakage with a survey meter.
   Microwave energy must be below the limit of 2mW/cm². (with a 275 ml water load).

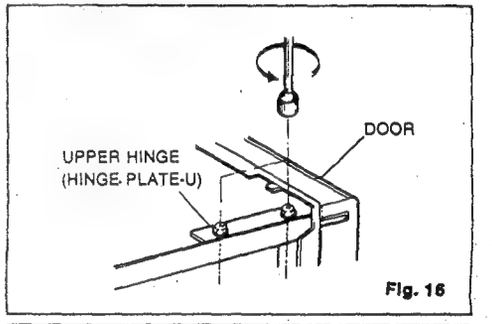


Fig. 16

I. REMOVING TURNTABLE MOTOR (FIG. 17)

(1) Remove the turntable and rotating ring.
(2) Remove the turntable shaft VERY CAREFULLY with a slotted screwdriver. (Fig. 18)
(3) Upset the unit.
(4) Remove one screw to detach the motor cover from the motor bracket.
(5) Remove the wire leads from the turntable motor CAREFULLY with long nose pliers.
(6) Remove two screws securing the turntable motor to the motor bracket.

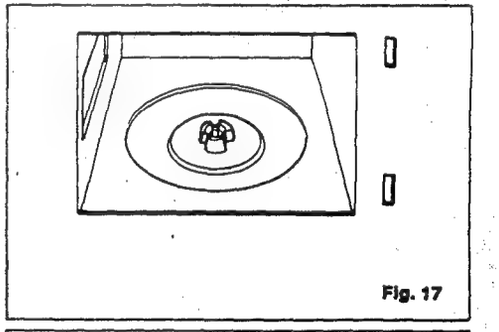


Fig. 17

NOTES

1. Remove the wire lead from the turntable motor VERY CAREFULLY WITH long nose pliers
2. Be sure to grasp the connector, and not the wires when removing the wires.

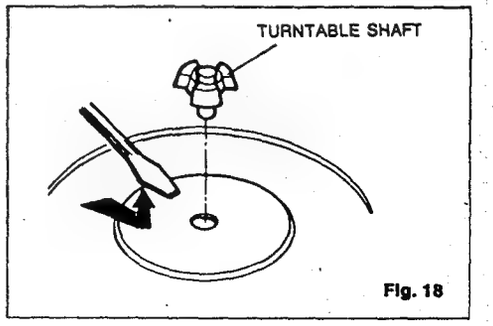


Fig. 18

PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

CAUTIONS

- Be sure to check a microwave emission prior to servicing the oven if the oven is operative prior to servicing.
- If the oven operates with the door open, the service personnel should tell the user not to operate the oven.
- The service personnel should check all surface and vent openings for microwave emission testing.
- Check for microwave energy leakage after every servicing. The power density of the microwave radiation leakage emitted by the microwave oven should not exceed 2 mW/cm. sq. And always start measuring of an unknown field to assure safety for operating personnel from radiation leakage.

NOTE: The standard is 5 mW/cm. sq. while in he customer's home. 2 mW/cm. sq. stated here is manufacturer's own voluntary standard for units in customer's home.

EQUIPMENT

- Electromagnetic energy leakage monitor (NARDA 8100B, HOLADAY H1501)
- 600 cc glass beaker
- Glass thermometer 100°C or 212°F

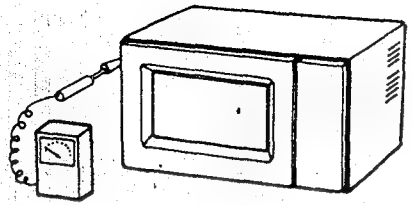


Fig. 19

MEASURING MICROWAVE ENERGY LEAKAGE

- Pour 275 ± 15cc of 20 ± 5°C water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
- Set the energy leakage monitor to 2,450 MHz and use it following the manufacturer's recommended test procedure to assure correct result.
- When measuring the leakage, always use the 2 inch (5 cm) spacer supplied with the probe.
- Operate the oven at its maximum output.
- Measure the microwave radiation using and electromagnetic radiation monitor by holding the probe perpendicular to the surface being measured. (see Fig. 20).

Move probe along shaded area

Probe scanning speed
less than 2.5 cm/sec

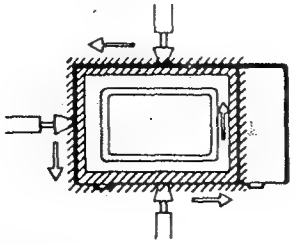


Fig. 20

MEASUREMNT WITH THE OUTER CASE REMOVED

- When you replace the magnetron, measure for microwave energy leakage before the outer case is installed and after all necessary components are replaced or adjusted.
  Special care should be taken in measuring the following parts.
  —Around the magnetron.
  —The waveguide

WARNING: AVOID CONTACTING ANY HIGH VOLTAGE PARTS.

MEASUREMENT WITH A FULLY ASSEMBLED OVEN

- After all components, including the outer panels, are fully assembled, measure for microwave energy leakage around the door viewing window, the exhaust opening and air inlet openings.
- Microwave energy leakage must not exceed the values prescibed below.

NOTES:

Leakage with the outer panels removed—less than 5 mW/cm.sq.
Leakage for a fully assembled oven ("Before the latch switch (primary) interrupted") with the door in a slightly opened position—less than 2 mW/cm.sq.

NOTE WHEN MEASURING

- Do not exceed meter full scale deflection.
- The test probe must be removed no faster than 1 inch/sec (2.5cm/sec) along the shaded area, otherwise a false reading may result.
- The test probe must be held with the grip portion of the handle.
  A false reading may result if the operator's hand is between the handle and the probe.
- When testing near a corner of the door, keep the probe perpendicular to the surface making sure the probe horizontally along the oven surface, this may possibly cause probe damage.

RECORD KEEPING AND NOTIFICATION AFTER MEASUREMENT

- After adjustment and repair of any microwave energy interruption or microwave energy blocking device, record the measured values for future reference. Also enter the information on the service invoice.
- Should the microwave energy leakage not be more than 2 mW/cm.sq. after determining that all parts are in good condition, functioning properly and genuine replacement parts which are listed in this manual have been used.
- At least once a year, have the electromagnetic energy leakage monitor checked for calibration by its manufacturer.

DETERMINATION OF MEASUREMENT OF MICROWAVE POWER OUTPUT

- Microwave power output measurement is made with the microwave oven supplied at its rated voltage and operated at its maximum microwave power setting with a load of (1000 ± 5) g of potable water.
- The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
- The oven and the empty vessel are at ambient temperature prior to the start of the test.
- The initial temperature of the water is (10 ± 2)°C. It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the centre of the shelf which is in the lowest position and the microwave power switched on.
- The time T for the temperature of the water to rise by a value ΔT of (10 ± 2) K is measured, where T is the time in seconds and ΔT is the temperature rise. The initial and final water temperatures are selected so that the maximum difference between the final water temperature and the ambient temperature is 5 K.
- The microwave power output P in watts is calculated from the following formula:

$$P = \frac{4187(\Delta T)}{T1}$$

is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.

- The water is stirred to equalize temperature throughout the vessel, prior to measuring the final water temperature.
- Stirring devices and measuring instruments are selected in order to minimize addition or removal of heat.

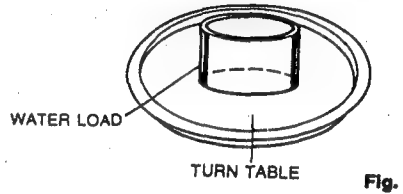


Fig. 24

TROUBLESHOOTING GUIDE

When you get a complaint from your customer, evaluate the complaint carefully before going to the customer's home. If the following symptoms apply, please inform the customer in the proper use of the microwave oven. This can eliminate an unnecessary call.

CONDITION	CAUSE	REMEDY
Microwave oven does not work	Over loaded circuit	Avoid using electrical appliances when you use the microwave oven
	Microwave oven plug is not inserted tightly	Insert microwave oven plug securely
Output power is too low	Low AC input voltage	Use the microwave oven on adequate line voltage
	Food temperature is too low	This may not be a defect. It is possible that the food should be cooked for a longer time period.
Sparks occurring	Using metallic ware which touch the oven wall	Do not use metallic ware for cooking except where noted in the cook book.
	Ceramic ware trimmed in gold or silver powder is used	Do not use any type of cookware with metallic trimming.
Uneven cooking	Inconsistent intensity of microwave energy due to their inherent characteristics	1. Wrap thinner part with aluminium foil. 2. Use plastic wrap or with a lid. 3. Stir once or twice while cooking soup, cocoa or milk etc.

CONTROL CIRCUIT TROUBLESHOOTING

Follow the procedure below to check the control circuit.

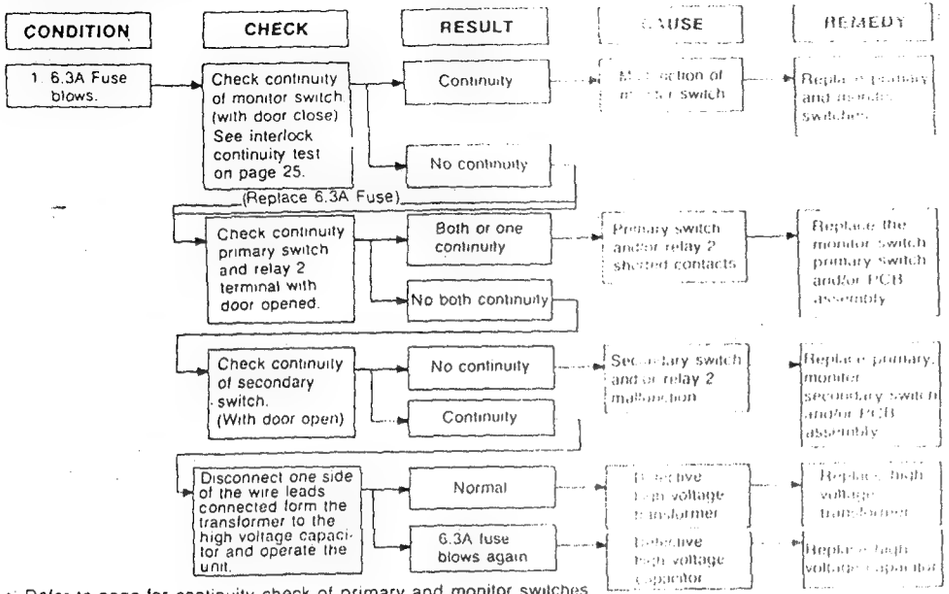
- Check grounding before checking for other trouble.
- Be careful of the high voltage circuit.
- When checking the continuity of the switches or transformer, disconnect one lead wire from these parts and then check continuity without turning the power source on.
- Do not touch any part of the circuitry on the printed circuit board, since static electric discharge may damage the digital programmer circuit.
  Always drain electrostatic energy to ground by touching a known earth ground while working on this circuit.
- First operate the microwave oven following the correct operating procedures.

(TROUBLE 1) The following visual conditions indicate a probable defective printed circuit board (PCB)

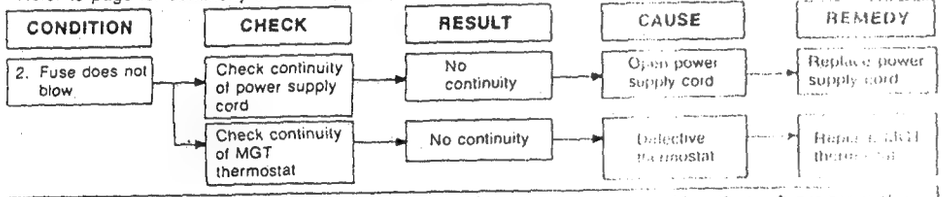
- Incomplete segments.
  –Segment missing.
  –Partial segement missing.
  –Digit flickering (NOTE: Slight Flickering Normal)
- Color does not turn on, when they should.
- A distinct change in the brightness of one or more numbers in display.
- One or more digits in the display not lighting when they should.
- Display indicates a number different from one touched. For example, key in 5 and 3 appears in the display.
- Specific numbers (for example 7 or 9) will not display when key pad is touched.
- Display does not count down with time cooking or clock will not maintain the time of day.
  Display erratically jumps in time while counting down.
  Display counts down noticeably too fast, whole cooking.
  It does not beep twice when it shifts from stage cooking to second stage cooking in the 2 stage cooking program.
  Each power indicator light does not reappear when cooking is finished, and start pad is touched.
- Beep sound is not heard when correct key is touched.

COND N	CHECK	RESULT	CAUSE	REMEDY
1. No f am input.	Check the connection between key membrance and printed circuit board (PCB)	Connected	Defective PCB assembly	Replace PCB assembly
		No Connected	Loose connection	Connect than tightly
2. Som inputs progr mmed	Replace key membrance and operation.	Everything works as specified	Defective key membrane	Replace key membrane
		Still have trouble	Defective (PCB)	Replace (PCB)
3. Displa ows a num or figure erent from or touche				
4. Errati o- gram g when p ssing other pads				
play figure becomes fixed and cannot accept any input.				

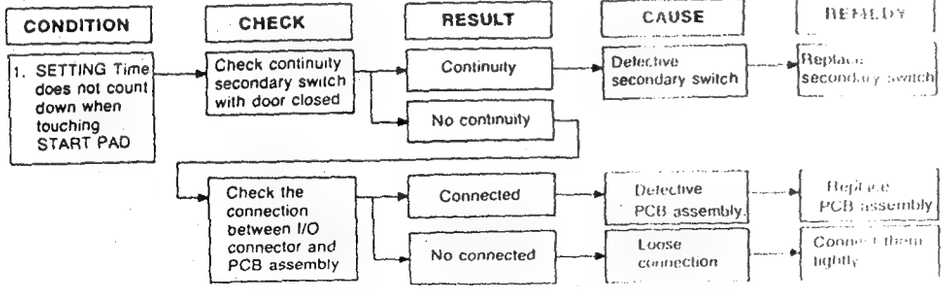
(TROUBLE 2) Oven does not operate at all; Display window does not display any figures and no input is accepted.

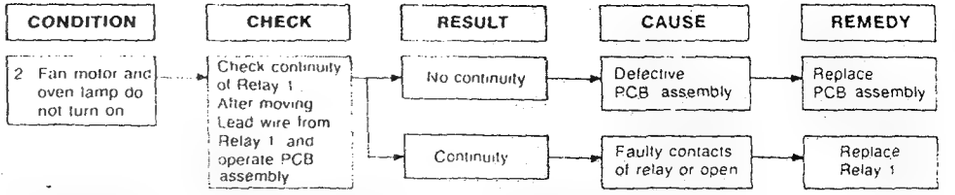


• Refer to page for continuity check of primary and monitor switches

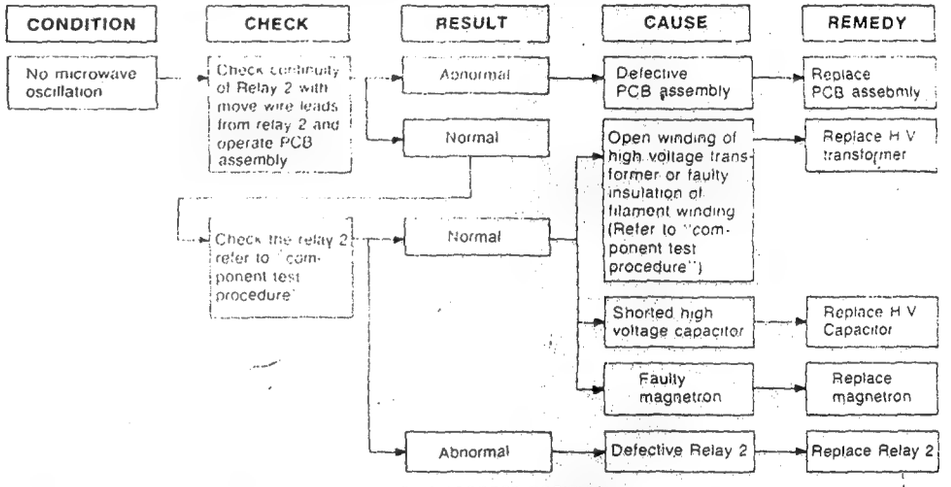


(TROUBLE 3) Display shows all figures set, but oven does not start cooking through program time and START pad is touched.



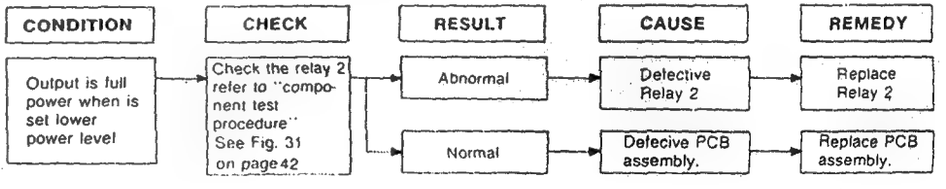


(TROUBLE 4) No microwave oscillation oven although the fan motor, oven lamp and synchronous motor operate (Display operates properly)

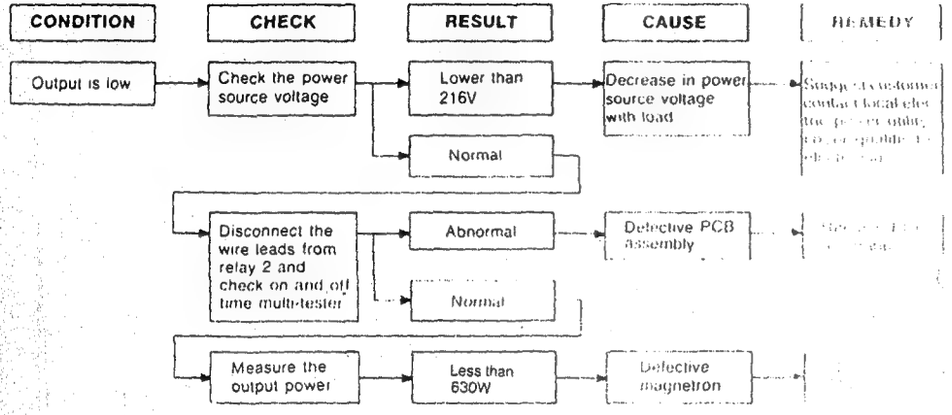


NOTE:
- MAKE SURE THE WIRE LEADS ARE IN THE CORRECT POSITION
- WHEN REMOVING THE WIRE LEADS FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, AND NOT THE WIRES
- WHEN REMOVING THE MGT BE SURE TO INSTALL THE MGT. GASKET IN THE CORRECT POSITION AND IN GOOD CONDITION.

(TROUBLE 5) Oven does not cook properly when programmed for power level 1 through power level 10 (cooking powers operate properly on full)



(TROUBLE 6) Output power is low.



NOTE 3: The periods of the line voltage being applied to each power setting should read as shown below.

Power	V on time	V off time
10	22 sec	0 sec
6	14 sec	8 sec
3	8 sec	14 sec
1	4 sec	18 sec
0	0 sec	22 sec

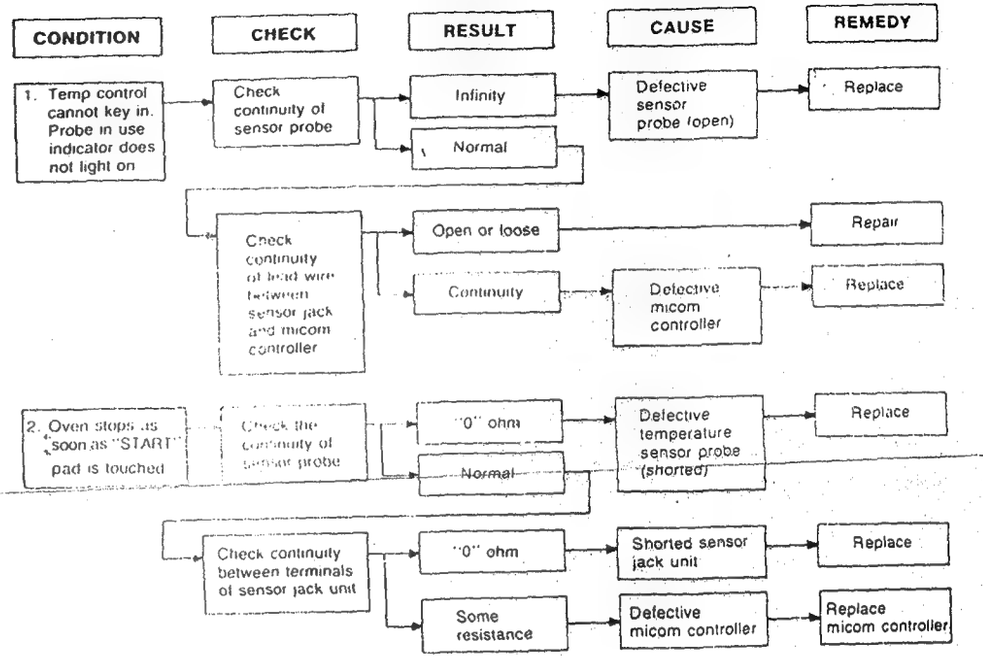
When the periods of the line voltage, are other than those listed on the left, replace the touch control circuit.

COOKING TIME COMPLAINTS

Before faulting the microwave oven, check ... ing when complaints of excessively long ... are received:

- Size or volume of food is larger than ... maximum.
- Temperature of food is too low. (Frozen ... food).
- Cooking without a lid or cooking unwra...
- Check the house line voltage at the time of ... the microwave oven is used most often, with all ... other lamps and appliances that are normally ... on. If less than 216 Volts AC the problem ... with ... line voltage. If the line voltage is subject ... variations, or if the wiring is inadequate, ... the problem may rest with the local power ... or the electrician.

(TROUBLE 7) Temperature probe is plugged in and touch the TEMP PAD and touch the POWER LEVEL.



NOTE: • WHEN SENSOR PROBE IS SHORTED AND START PAD IS TOUCHED, "COOL" APPEARS IN THE DISPLAY WINDOW.
CHECK FOR RESISTANCE BETWEEN THE FOLLOWING SEGMENTS BY USING TESTER ON HIGHEST SCALE.

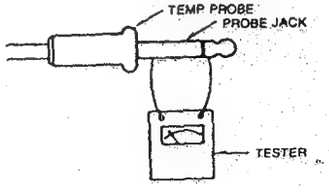


Fig. 21

COMPONENT TEST PROCEDURE

CAUTIONS
1. DISCONNECT THE POWER SUPPLY CORD FROM THE WALL OUTLET WHENEVER REMOVING THE OUTER CASE FROM THE UNIT. PROCEED WITH THE TEST ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER.
2. ALL OPERATIONAL CHECKS WITH MICROWAVE ENERGY MUST BE DONE WITH A LOAD (1 LITER OF WATER IN CONTAINER) IN THE OVEN.

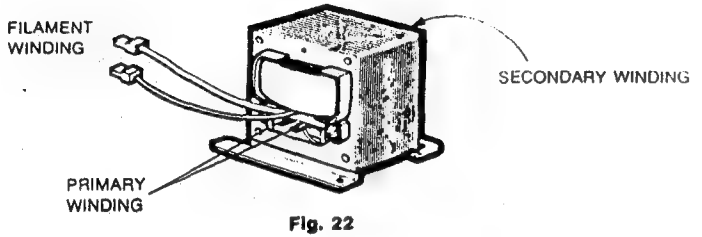
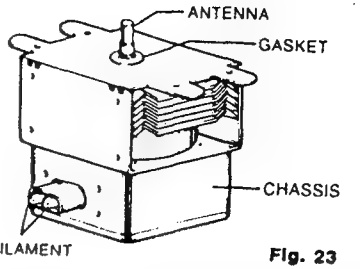
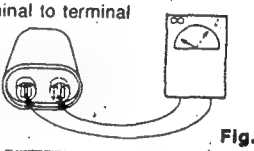
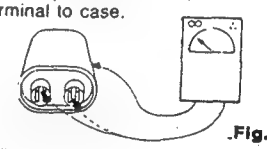
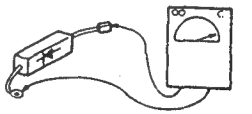
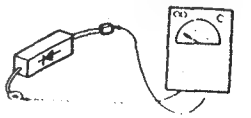
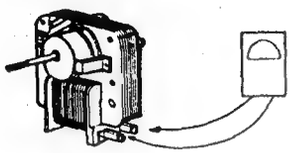
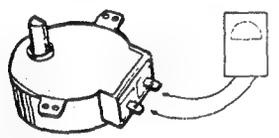


Fig. 22

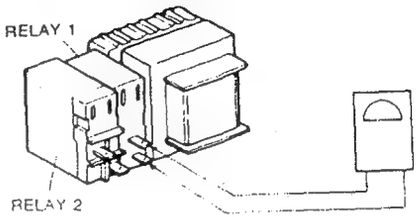
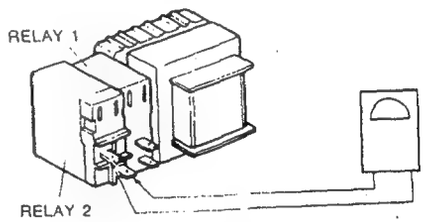
- **TEST PROCEDURE**

COMPONENTS	TEST PROCEDURE	RESULTS
HIGH VOLTAGE TRANSFORMER (Wire leads removed)	See FIG. 22 1. Measure the resistance. (Ohm-meter scale: RX1) • Primary winding • Secondary winding • Filament winding 2. Measure the resistance (Ohm-meter scale: RX1000) • Primary winding to ground • Filament winding to ground	 Approx. 1.5~1.7 ohm Approx. 125~135 ohm Less than 0.01 ohm Normal : Infinite Normal : Infinite
MAGNETRON (Wire leads removed)	See FIG. 23 1. Measure the resistance. (Ohm-meter scale: RX1) • Filament terminal 2. Measure the resistance. (Ohm-meter scale: RX1000) • Filament to chassis	Normal : Less than 1 ohm Normal : Infinite ohm

COMPONENTS	TEST PROCEDURE	RESULTS
	 Fig. 23 **NOTE** When testing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.	
HIGH VOLTAGE CAPACITOR	Measure the resistance. (Ohm-meter scale: RX1000) • Terminal to terminal  Fig. 24	Normal: Momentary indicates several ohms, and then gradually returns to infinite.
	Measure the resistance. (Ohm-meter scale: RX1000) • Terminal to case.  Fig. 25	Normal : Infinite
HIGH VOLTAGE DIODE	Measure the continuity. (Forward) (Ohm-meter scale: RX1000)  Fig. 26	Normal : Continuity Abnormal: Infinite
NOTE: Some inexpensive meters many indicate infinite resistance in both directions.	Measure the continuity. (Reverse) (Ohm-meter scale: RX1000)  Fig. 27	Normal : Infinite Abnormal : Continuity

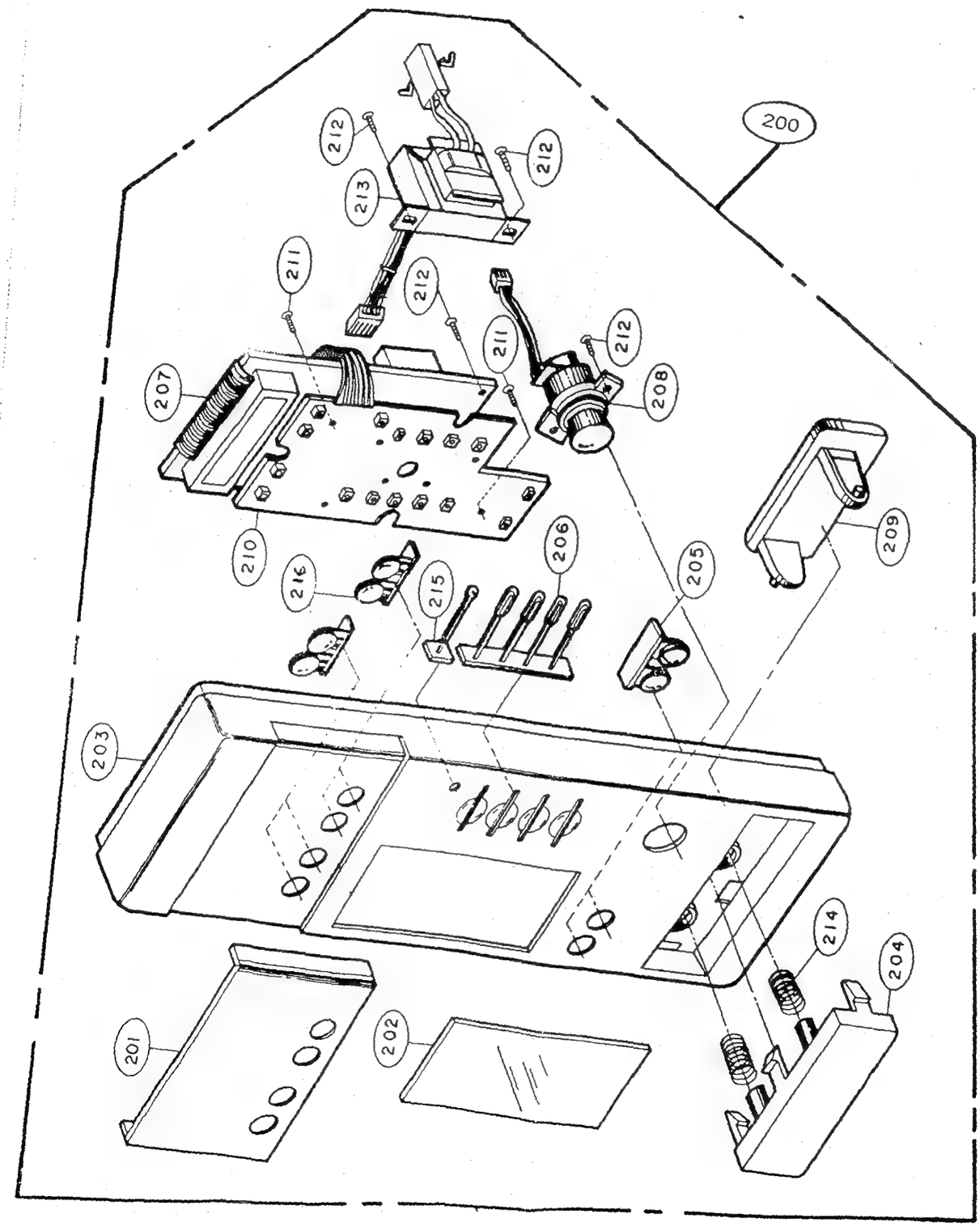
COMPONENTS	TEST PROCEDURE	RESULTS
FAN MOTOR (Wire leads removed)	Measure the resistance. (Ohm-meter scale: RX1)  Fig. 28	Normal: Approx. 280 ohm Abnormal: Infinite or several ohms.
SYNCHRONOUS MOTOR (Wire leads removed)	Measure the resistance (Ohm-meter scale: RX1000)  Fig. 29	Normal: Approx. 17 [illegible] Abnormal: Infinite or [illegible]

NOTE:
- A MICROWAVE ENERGY TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON.
- MAKE SURE THE WIRE LEADS ARE IN THE CORRECT POSITION.
- WHEN REMOVING THE WIRE LEADS FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, NOT THE WIRES.

COMPONENT	TEST PROCEDURE	RESULTS	
		STAND-BY CONDITION	START CONDITION
RELAY 1	Check for continuity of the relay 1 with an ohm-meter. (Remove wire leads from relay 1 and operate the unit.)  Fig. 30		
RELAY 2	Check for continuity of relay 2 with an ohm-meter. (Remove wire leads from relay 2 and operate the unit.  Fig. 31	POWER LEVEL	/
		1	4 sec / 18 sec
		2	6 sec / 16 sec
		3	8 sec / 14 sec
		4	10 sec / 12 sec
		5	12 sec / 10 sec
		6	14 sec / 8 sec
		7	16 sec / 6 sec
		8	18 sec / 4 sec
		9	20 sec / 2 sec
		10	22 sec / 0

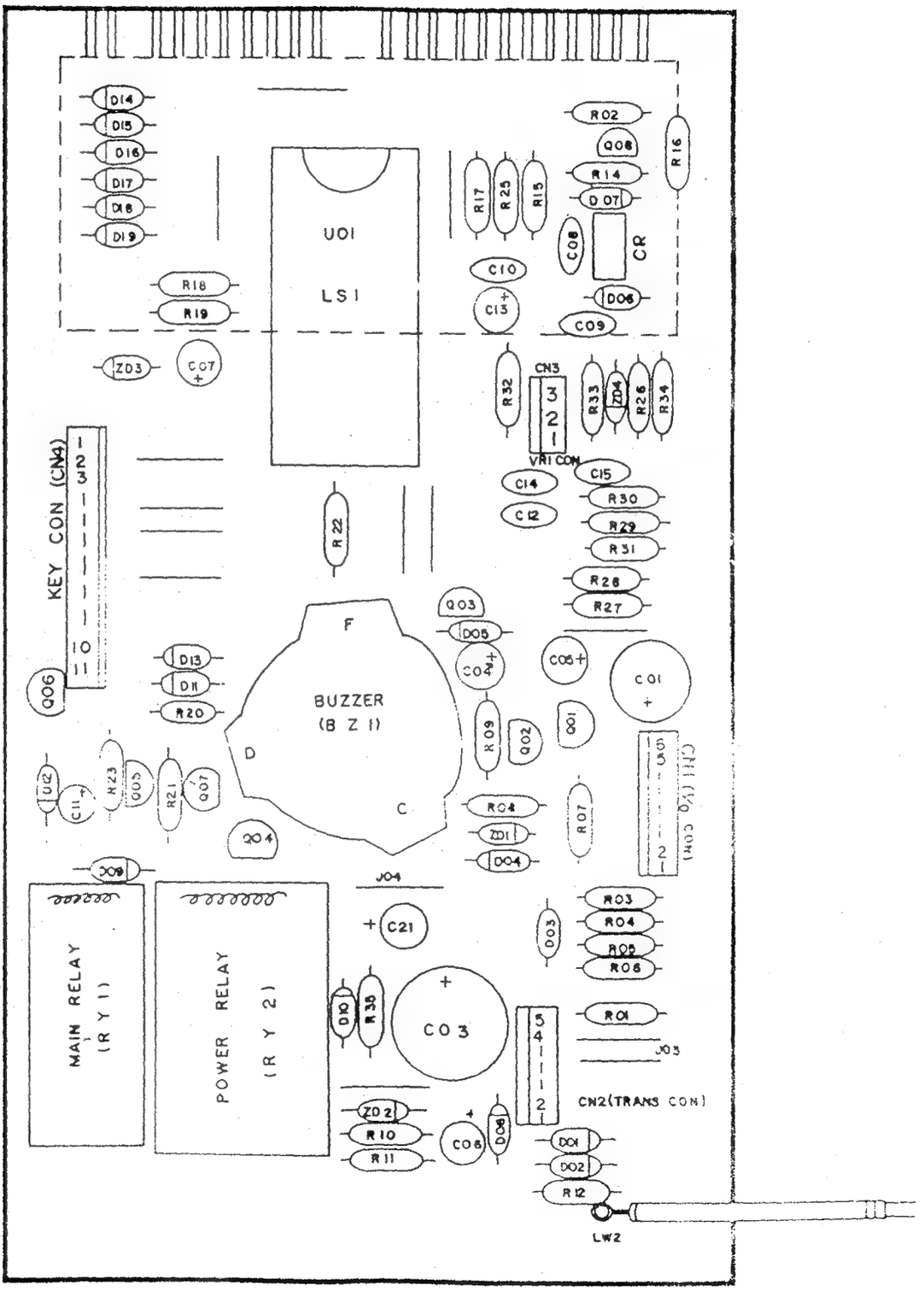
NOTE:
- A MICROWAVE ENERGY TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON.
- MAKE SURE THE WIRE LEADS ARE IN THE CORRECT POSITION.
- WHEN REMOVING THE WIRE LEADS FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, NOT THE WIRES.

2-1. CONTROL PANEL PARTS

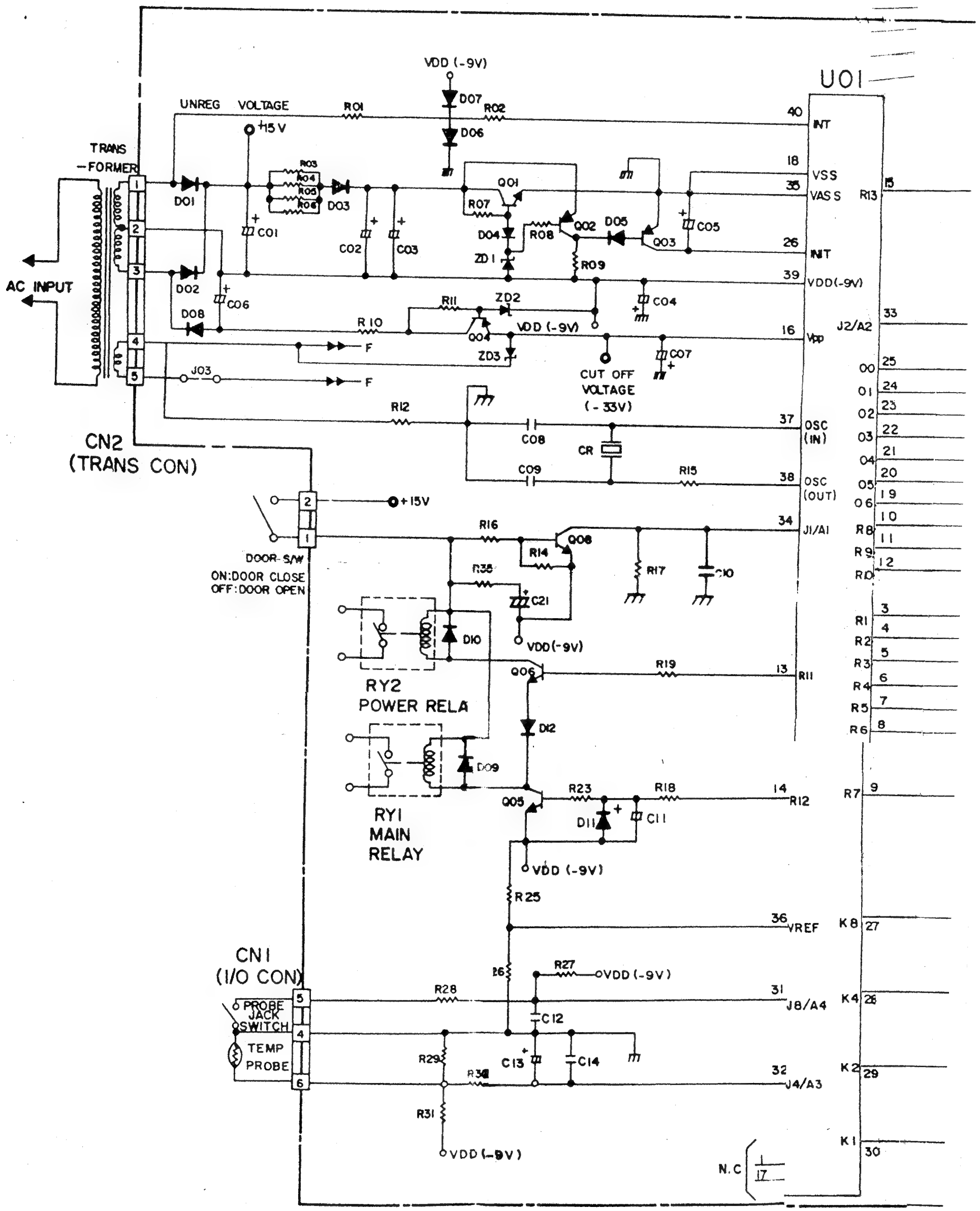


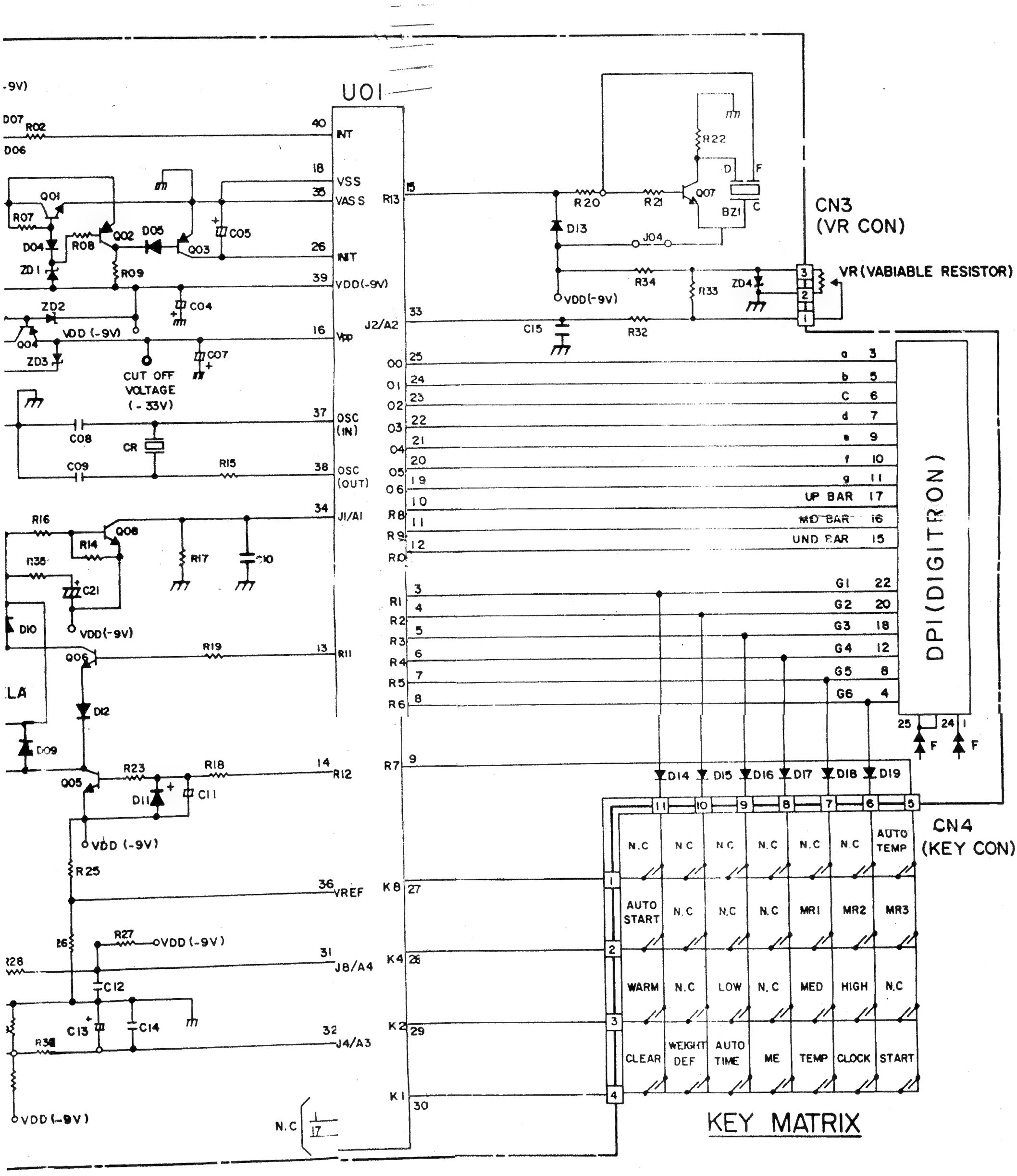
2-2. COMPONENT VIEW OF PCB

COMPONENT SIDE

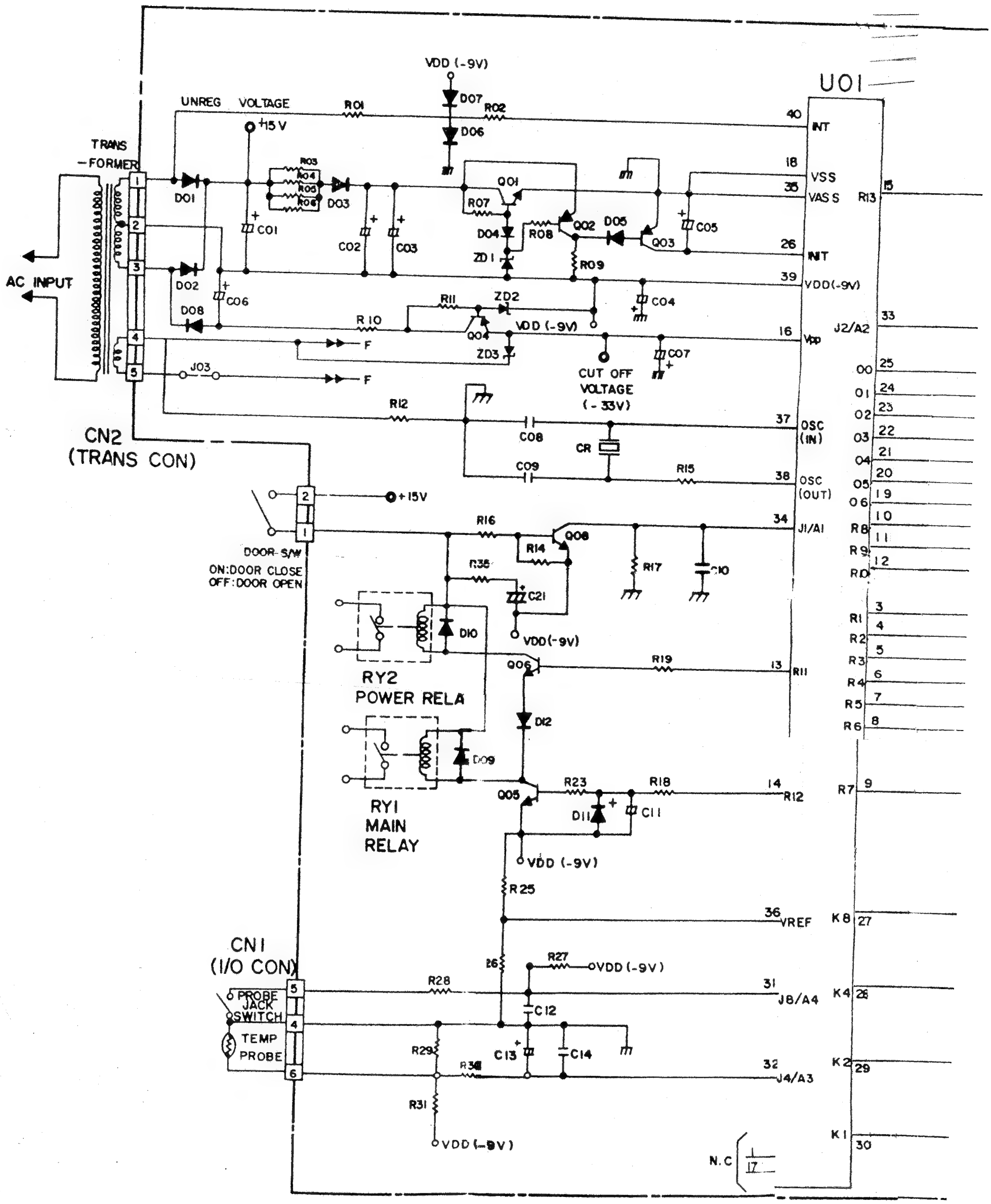


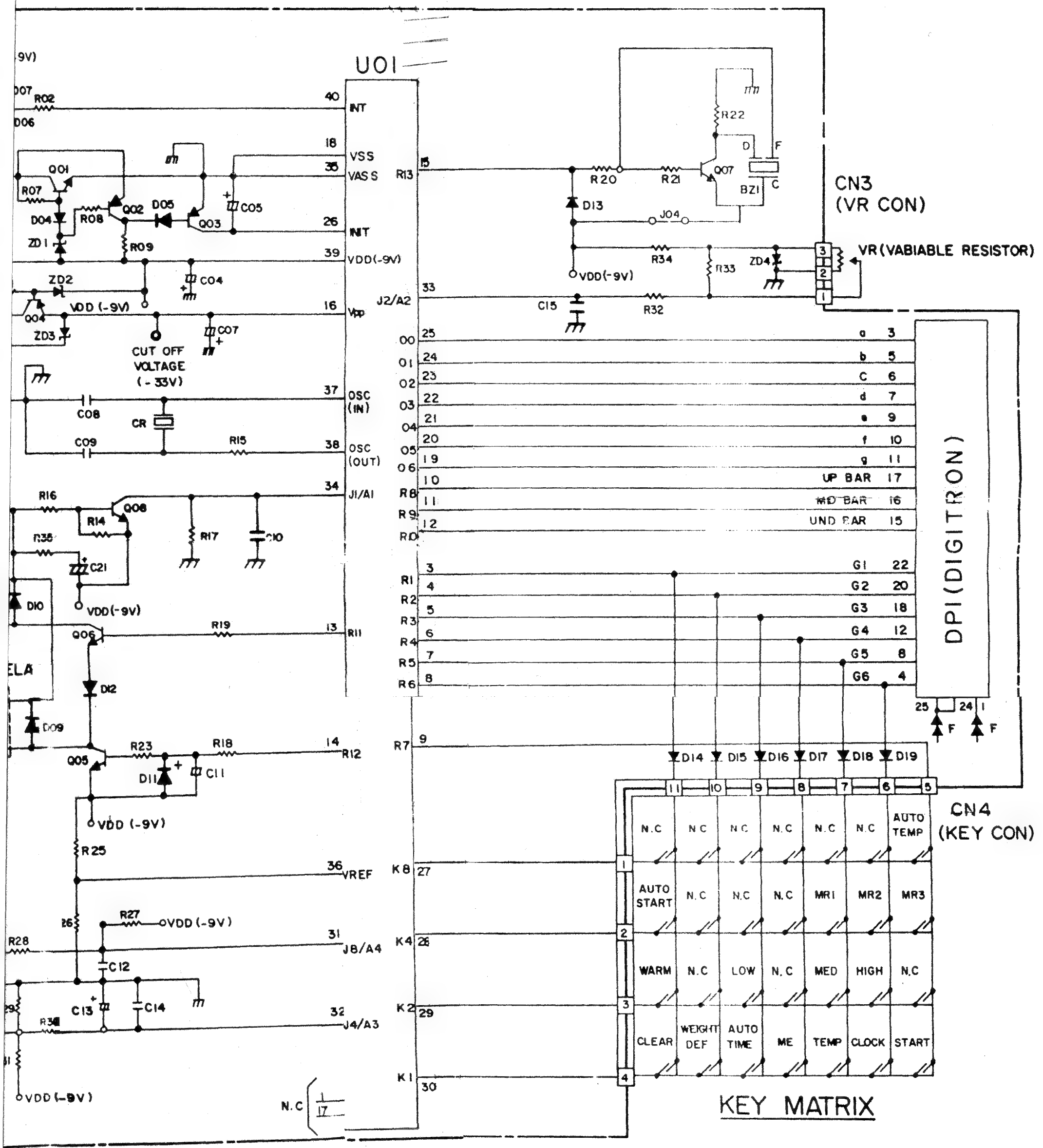
·3 SCHEMATIC DIAGRAM FOR CIRCUIT BOARD




-9V)
U01
D07
R02
D06
40
INT
18
VSS
35
VASS
Q01
R07
D04
R08
Q02
D05
Q03
C05
26
INT
ZD1
R09
39
VDD(-9V)
ZD2
C04
Q04
VDD (-9V)
16
Vpp
ZD3
C07
CUT OFF
VOLTAGE
(-33V)
37
OSC
(IN)
C08
CR
C09
R15
38
OSC
(OUT)
34
J1/A1
R16
Q08
R14
R17
C10
R35
C21
D10
VDD(-9V)
R19
13
R11
Q06
D12
D09
R23
R18
14
R12
Q05
D11
C11
VDD (-9V)
R25
36
VREF
R27
VDD (-9V)
31
J8/A4
C12
C13
C14
32
J4/A3
VDD(-9V)
N.C
17
R13
15
R20
R21
Q07
BZ1
D13
J04
R34
R33
ZD4
VDD(-9V)
C15
R32
33
J2/A2
CN3
(VR CON)
VR(VABIABLE RESISTOR)
3
2
1
00
01
02
03
04
05
06
R8
R9
R0
25
24
23
22
21
20
19
10
11
12
a 3
b 5
C 6
d 7
e 9
f 10
g 11
UP BAR 17
MD BAR 16
UND BAR 15
R1
R2
R3
R4
R5
R6
3
4
5
6
7
8
G1 22
G2 20
G3 18
G4 12
G5 8
G6 4
DPI(DIGITRON)
25
24
1
F
F
R7
9
D14
D15
D16
D17
D18
D19
11
10
9
8
7
6
5
CN4
(KEY CON)
K8
27
K4
26
K2
29
K1
30
1
2
3
4
N.C
N.C
N.C
N.C
N.C
N.C
AUTO TEMP
AUTO START
N.C
N.C
N.C
MR1
MR2
MR3
WARM
N.C
LOW
N.C
MED
HIGH
N.C
CLEAR
WEIGHT DEF
AUTO TIME
ME
TEMP
CLOCK
START
KEY MATRIX

-3 SCHEMATIC DIAGRAM FOR CIRCUIT BOARD



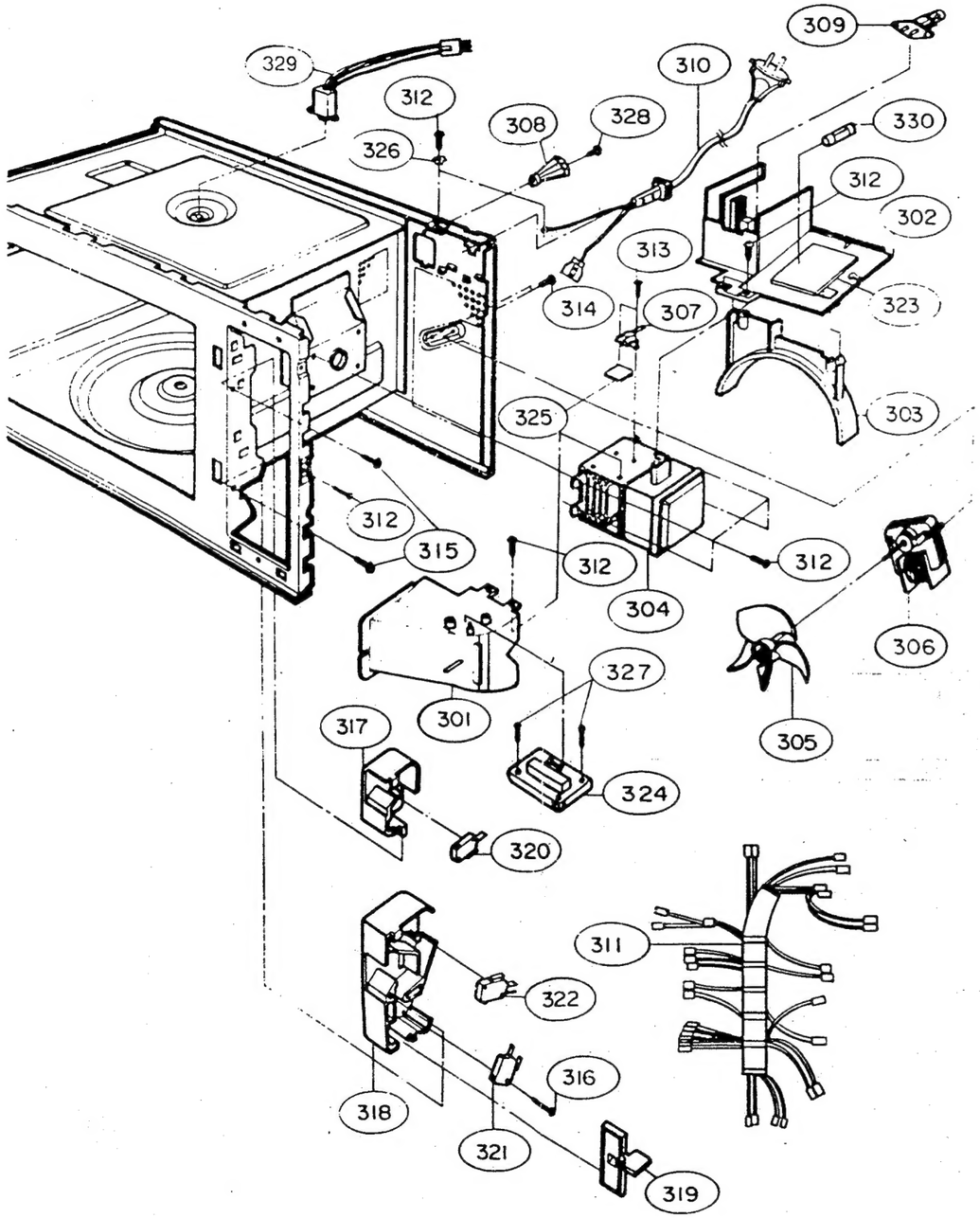

U01
INT
VSS
VASS
INT
VDD(-9V)
Vpp
OSC (IN)
OSC (OUT)
J1/A1
J2/A2
J8/A4
J4/A3
VREF
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R25
R27
R28
R32
R33
R34
R35
R36
R38
C04
C05
C07
C08
C09
C10
C11
C12
C13
C14
C15
C21
CR
Q001
Q002
Q003
Q004
Q005
Q006
Q007
Q008
D04
D05
D09
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
ZD1
ZD2
ZD3
ZD4
J04
BZ1
CUT OFF VOLTAGE (-33V)
VDD (-9V)
VR(VABIABLE RESISTOR)
CN3 (VR CON)
DPI(DIGITRON)
CN4 (KEY CON)
UP BAR
MID BAR
UND BAR
G1
G2
G3
G4
G5
G6
N.C
AUTO TEMP
AUTO START
MR1
MR2
MR3
WARM
LOW
MED
HIGH
WEIGHT DEF
AUTO TIME
ME
TEMP
CLOCK
START
CLEAR
KEY MATRIX

2-4 CIRCUIT BOARD PARTS LIST

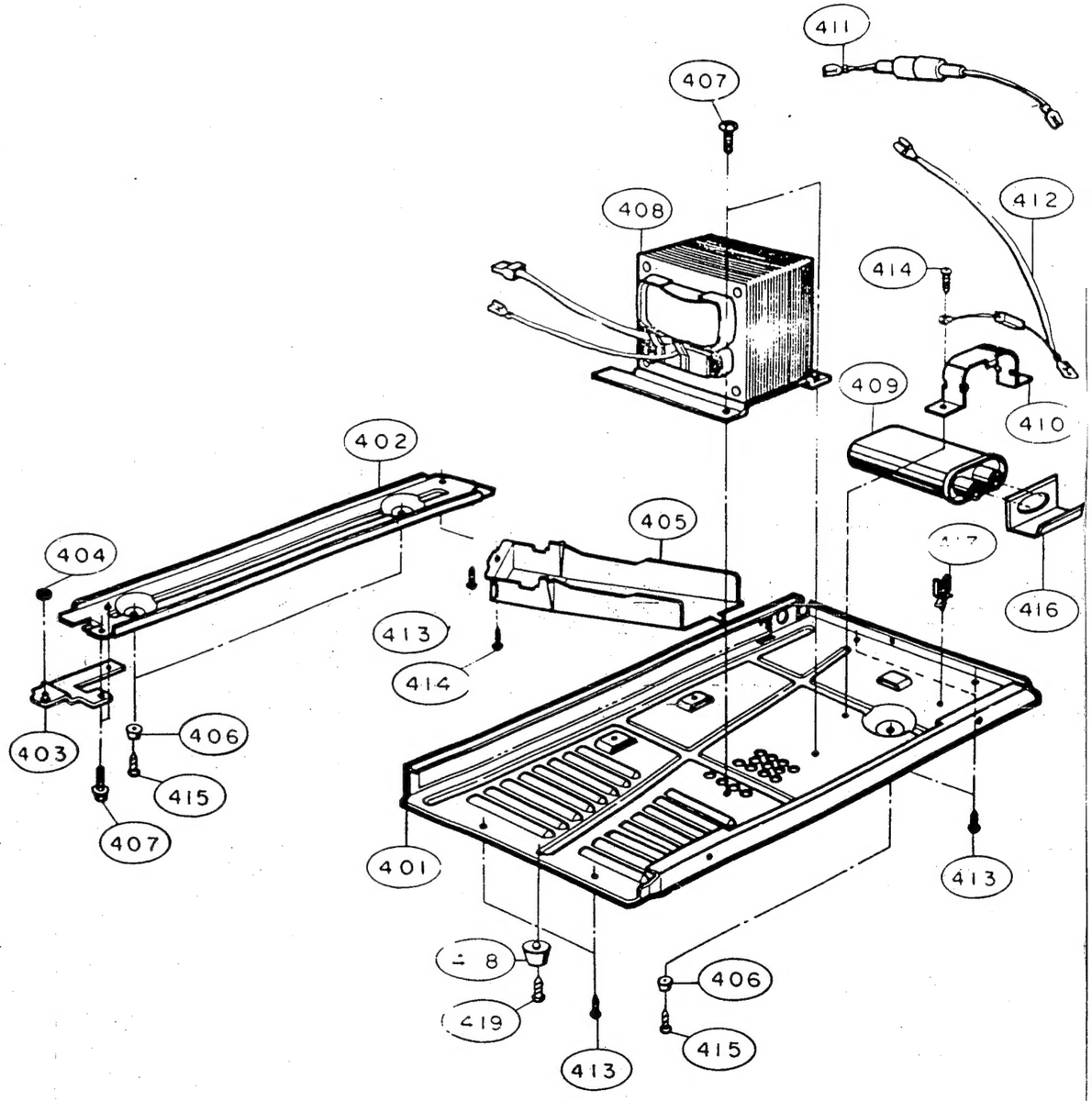
SCHEMATIC LOCATION	PART NO.	DESCRIPTION	QTY
INTEGRATED CIRCUITS			
U01	CQ30208A	TMS2675(M67195)	1
TRANSISTORS			
Q01	CQ31036A	C1627	1
Q02	CQ31013A	A1015	1
Q03	CQ31013A	A1015	1
Q04	CQ31013A	A1015	1
Q05	CQ31028D	C1815	1
Q06	CQ31028D	C1815	1
Q07	CQ31012A	C1959	1
Q08	CQ31028D	C1815	1
ZENER DIODES			
ZD1	CQ32067A	9.1V 0.5W	1
ZD2	CQ32064A	24V 0.5W	1
ZD3	CQ32017A	7.5V 1W	1
ZD4	CQ32060A	5.1V 0.5W	1
DIODES			
D01	CQ32001B	1N4002	1
D02	CQ32001B	1N4002	1
D03	CQ32005A	1N4148	1
D04	CQ32005A	1N4148	1
D05	CQ32005A	1N4148	1
D06	CQ32005A	1N4148	1
D07	CQ32005A	1N4148	1
D08	CQ32005A	1N4148	1
D09	CQ32005A	1N4148	1
D10	CQ32005A	1N4148	1
D11	CQ32005A	1N4148	1
D12	CQ32005A	1N4148	1
D13	CQ32005A	1N4148	1
D14	CQ32005A	1N4148	1
D15	CQ32005A	1N4148	1
D16	CQ32005A	1N4148	1
D17	CQ32005A	1N4148	1
D18	CQ32005A	1N4148	1
D19	CQ32005A	1N4148	1
RESISTORS			
R01	RD473J42	CARBON FILM, 47K ohm 1/4W 5%	1
R02	RD103J42	CARBON FILM, 10K ohm 1/4W 5%	1
R03	RD391J42	CARBON FILM, 390 ohm 1/4W 5%	1
R04	RD391J42	CARBON FILM, 390 ohm 1/4W 5%	1
R05	RD391J42	CARBON FILM, 390 ohm 1/4W 5%	1
R06	RD391J42	CARBON FILM, 390 ohm 1/4W 5%	1
R07	RD202J42	CARBON FILM, 2K ohm 1/4W 5%	1
R08	RD223J42	CARBON FILM, 22K ohm 1/4W 5%	1

SCHEMATIC LOCATION	PART NO	DESCRIPTIN	QTY
R09	RD223J42	CARBON FILM, 22K ohm 1/4W 5%	1
R10	RD471J42	CARBON FILM, 470 ohm 1/4W 5%	1
R11	RD223J42	CARBON FILM, 22K ohm 1/4W 5%	1
R12	RD104J42	CARBON FILM, 100K ohm 1/4W 5%	1
R14	RD562J42	CARBON FILM, 5.6K ohm 1/4W 5%	1
R15	RD562J42	CARBON FILM, 5.6K ohm 1/4W 5%	1
R16	RD223J42	CARBON FILM, 22K ohm 1/4W 5%	1
R17	RD562J42	CARBON FILM, 5.6K ohm 1/4W 5%	1
R18	RD332J42	CARBON FILM, 3.3K ohm 1/4W 5%	1
R19	RD562J42	CARBON FILM, 5.6K ohm 1/4W 5%	1
R20	RD134J42	CARBON FILM, 130K ohm 1/4W 5%	1
R21	RD392J42	CARBON FILM, 3.9K ohm 1/4W 5%	1
R22	RD751J42	CARBON FILM, 750 ohm 1/4W 5%	1
R23	RD122J42	CARBON FILM, 1.2K ohm 1/4W 5%	1
R25	CQ74020A	CARBON FILM, 395 ohm 1/4W 1%	1
R26	CQ74018A	CARBON FILM, 500 ohm 1/4W 1%	1
R27	RD223J42	CARBON FILM, 22K ohm 1/4W 5%	1
R28	RD100J42	CARBON FILM, 10 ohm 1/4W 5%	1
R29	RN163F42	CARBON FILM, 16K ohm 1/4W 1%	1
R30	RD100J42	CARBON FILM, 10 ohm 1/4W 5%	1
R31	CQ74036A	CARBON FILM, 14.7K ohm 1/4W 1%	1
R32	RD100J42	CARBON FILM, 10 ohm 1/4W 5%	1
R33	RD105J42	CARBON FILM, 1M ohm 1/4W 5%	1
R34	RD391J42	CARBON FILM, 390 ohm 1/4W 5%	1
R35	RD561J42	CARBON FILM, 560 ohm 1/4W 5%	1
CAPACITORS			
C01	CE101E1M	ELECTROLYTIC 100 MFD 20% 35V	1
C03	CE681E1M	ELECTROLYTIC 680 MFD 20% 35V	1
C04	CE101B1M	ELECTROLYTIC 100 MFD 20% 10V	1
C05	CE4R7E1M	ELECTROLYTIC 4.7 MFD 20% 35V	1
C06	CE100E1M	ELECTROLYTIC 10 MFD 20% 35V	1
C07	CE010F1M	ELECTROLYTIC 1 MFD 20% 50V	1
C08	CC101Z1F	CERAMIC 100 PFD 5% 50V	1
C09	CC101Z1F	CERAMIC 100 PFD 5% 50V	1
C10	CK104Z1F	CERAMIC 0.1 MFD 5% 50V	1
C11	CE101B1M	ELECTROLYTIC 100 MFD 20% 10V	1
C12	CK223Z1F	CERAMIC 0.022 MFD 5% 50V	1
C13	CE100E1M	ELECTROLYTIC 10 MFD 20% 35V	1
C14	CK223Z1F	CERAMIC 0.022 MFD 5% 50V	1
C15	CK223Z1F	CERAMIC 0.022 MFD 5% 50V	1
MISCELLANEOUS			
CU1	4B72072F	CUSHION DISPLAY TUBE	2
BZ1	3D73006A	BUZZER, GPB-8-24N3, 1SD	1
CN1	2D52072E	CONNECTOR, IL-G-6-S3T2-E	1
CN2	2D52072D	CONNECTOR, IL-G-5-S3T2-E	1
CN3	2D52072B	CONNECTOR, IL-G-3-S3T2-E	1
CN4	2D52082A	CONNECTOR, MOLEX 52011-1110	1
CR1	CQ39034A	CERAMIC RESONATOR, CSB-500E	1
TB1	3D34036A	DISPLAY TUBE, 6-BT-131G	1
RY1	3B71308A	RELAY, MAIN JR1AF-TMP-DC24	1
RY2	3D65036A	RELAY, POWER JX1AF-TMP-DC24	1

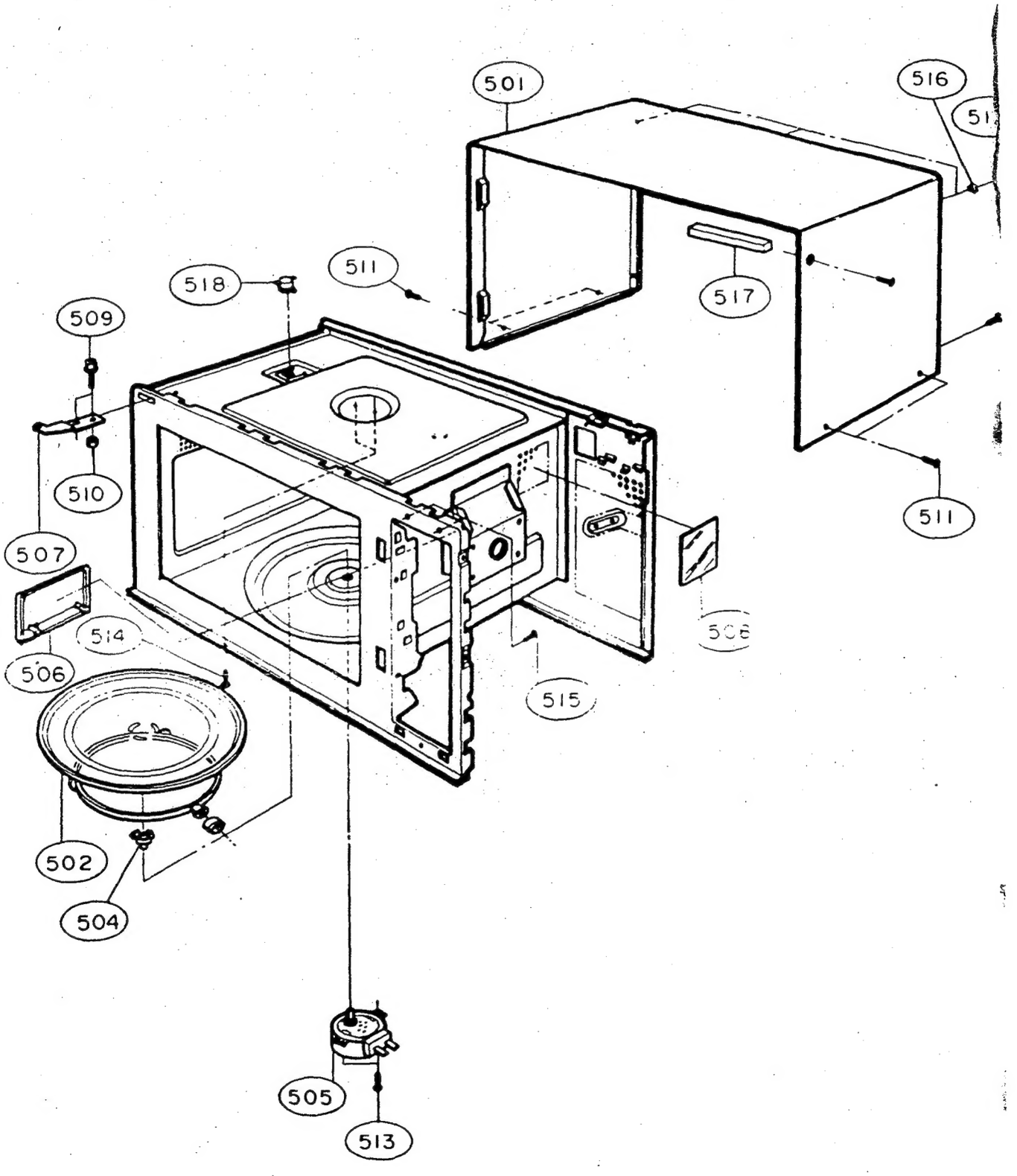
4 INTERIOR PARTS



4. BASE PLATE PARTS



5. CABINET PARTS



REPLACEMENT PARTS LIST

CAUTION: The ★ marks in the parts list designate components which have special characteristics important for safety, and should be replaced only with types identical to those in the original circuit or specified in the parts list. Do not risk the safety of the appliance through improper servicing.

KEY NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1. DOOR PARTS				
100	1B72064Q	DOOR GROSS ASM	1	S
101	1B72137K	FRONT SCREEN	1	S
102	53407019	DOUBLE TAPE	0.5M	
103	1B71355B	DOOR PANEL	1	S
104	1B71359A	DOOR FRAME ASM	1	S
105	1B71310A	CHOKE COVER	1	S
106	2B71078Z	SEAL TAPE	1	S
107	3B72867K	FERRITE RUBBER	1	S
108	3B72867L	FERRITE RUBBER	1	S
109	3B72867M	FERRITE RUBBER	1	S
110	3B72867N	FERRITE RUBBER	1	S
111	3B72885A	FERRITE RUBBER	1	S
112	3B71027A	LATCH-U	1	S
113	3B71026A	LATCH-L	1	S
114	4B71564A	LATCH PIN	2	S
115	4B73687A	LATCH ARM	1	S
116	4B71568A	LATCH SPRING	1	S
2. CONTROL PANEL PARTS				
200	1B71690C	MICOM CONTROLLER ASM	1	S
201	3B73023A	DIGITRON WINDOW	1	S
202	2B72462A	TACT SWITCH FILM	1	S
203	1B71567A	CONTROL PANEL	1	S
204	3B72535B	RELEASE BUTTON	1	S
205	3B73025A	BUTTON-C	3	S
206	3B73024C	BUTTON-L	1	S
207	2Q10244G	PCB SUB ASM	1	S
208	2B72486A	VOLUME ASM	1	S
209	3B7260A	RELEASE LEVER	1	S
210	2Q16366A	TACTILE KEY ASM	1	S
211	TPQ1636J	TAPPING SCREW	6	S
212	TPQ2236J	TAPPING SCREW	3	S
213	2Q71042G	POWER TRANS	1	S
214	4B72023A	BUTTON SPRING	2	S
215	4B74660A	CLOCK BUTTON	1	S
216	3B73025C	BUTTON-C	2	S
3. OVEN INTERIOR PARTS				
301	2B72101A	AIR DUCT	1	S
302	1B71380A	SUCTION GUIDE	1	S
303	3B72605A	AIR GUIDE	1	S
304	2B71732B	MAGNETRON	1	S
305	2B72125A	FAN	1	S
306	2B72378B	FAN MOTOR★	1	S
307	3B70068J	M.G.T THERMOSTAT(145℃)★	1	S
308	4B70774A	SPACER	1	S
309	3B71543D	BASELESS LAMP (240V, 20W)	1	S
310	2B71666F	POWER CORD ASM	1	S
311	1B71674A	LEAD WIRE ASM	1	S
312	TBQ2236J	TAP TITE SCREW	8	S
313	TPQ1636J	TAPPING SCREW	1	S
314	MTC2236J	MACHINE SCREW	2	S
315	4B70166B	SPECIAL SCREW-D	2	S
316	TPQ1644J	TAPPING SCREW	1	S
317	2B72362A	LATCH BOARD-U	1	S
318	2B72363A	LATCH BOARD-L	1	S
319	4B71561A	RELEASE ROD	1	S
320	3B73362G	MICRO SWITCH (PRIMARY)★	1	S
OR	3B70374C	MICRO SWITCH (PRIMARY)★	1	S
321	3B73362B	MICRO SWITCH (SECONDARY)★	1	S
OR	3B73362C	MICRO SWITCH (SECONDARY)★	1	S
322	3B73360E	MICRO SWITCH (MONITOR)★	1	S
OR	3B70374A	MICRO SWITCH (MONITOR)	1	S
323	2B72130D	NOISE FILTER ASM	1	S
324	3B72955A	INRUSH CURENT RELAY ASM	1	S
325	4B73136A	THERMO INSULATOR	1	S
327	TPQ1836J	TAPPING SCREW	2	S
328	4B71169A	SPECIAL SCREW	1	S
329	3B72917A	TEMP PROBE SOCKET ASM	1	S
330	4B71248D	FUSE (T6.3A)	1	S
4. BASE PLATE PARTS				
401	1B71342A	BASE PLATE	1	S
402	2B72103A	LEG PLATE	1	S
403	3B73370A	HINGE PLATE-L ASM	1	S
404	4B70143A	HINGE WASHER	1	S
405	3B72672A	MOTOR COVER	1	S
406	4B70770A	LEG	3	S
407	4B73763A	TAP TITE SCREW	5	S
408	2B72312A	H.V.TRANS★ (220V/50Hz)	1	S
410	4B70668A	H.V.CAPACITOR B.K.T	1	S
411	3B72892G	H.V.FUSE ASM★	1	S
412	3B73348D	H.V.DIODE-CABLE ASM★	1	S
413	TTQ2236J	TAPPING SCREW	6	S
414	TBQ2236J	TAP TITE SCREW	2	S
415	TTQ2241J	TAPPING SCREW	3	S
416	4B74664A	INSULATOR	1	S
417	4B72944B	WIRE HOLDER	1	S
418	3B70397B	LEG	1	S
419	TTQ2244J	TAPPING SCREW	1	S
5. CABINET PARTS				
501	1B71343A	OUT CASE	1	
OR	1B71343F	OUT CASE (PCM)	1	
502	1B71018A	GLASS TRAY	1	S
504	3B72373B	T/T SHAFT	1	S
505	2B71932N	SYNCHRONOUS MOTOR★	1	S
506	3B72673B	CANOPY	1	S
507	3B72708A	ORNGE PLATE-U	1	S
508	54103139	P.E TAPE	0.07M 0.06M	S
OR	54103136	P.E TAPE		
509	4B70654A	SPECIAL SCREW-G	2	S
510	NHA2600J	NUT,HEXAGON	2	S
511	TTQ2236L	TAPPING SCREW	5	S
512	TTQ2234J	TAPPING SCREW	3	S
513	TBQ2236J	TAP TITE SCREW	2	S
514	TTN1636P	TAPPING SCREW	2	S
515	TTQ2236J	TAPPING SCREW	2	S
516	4H00056C	LOCK WASHER	2	S
517	3B72245F	CUSHION	1	S
518	3B70069M	OVEN THERMOSTAT	1	S

S SERVICE PARTS